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Our Planet

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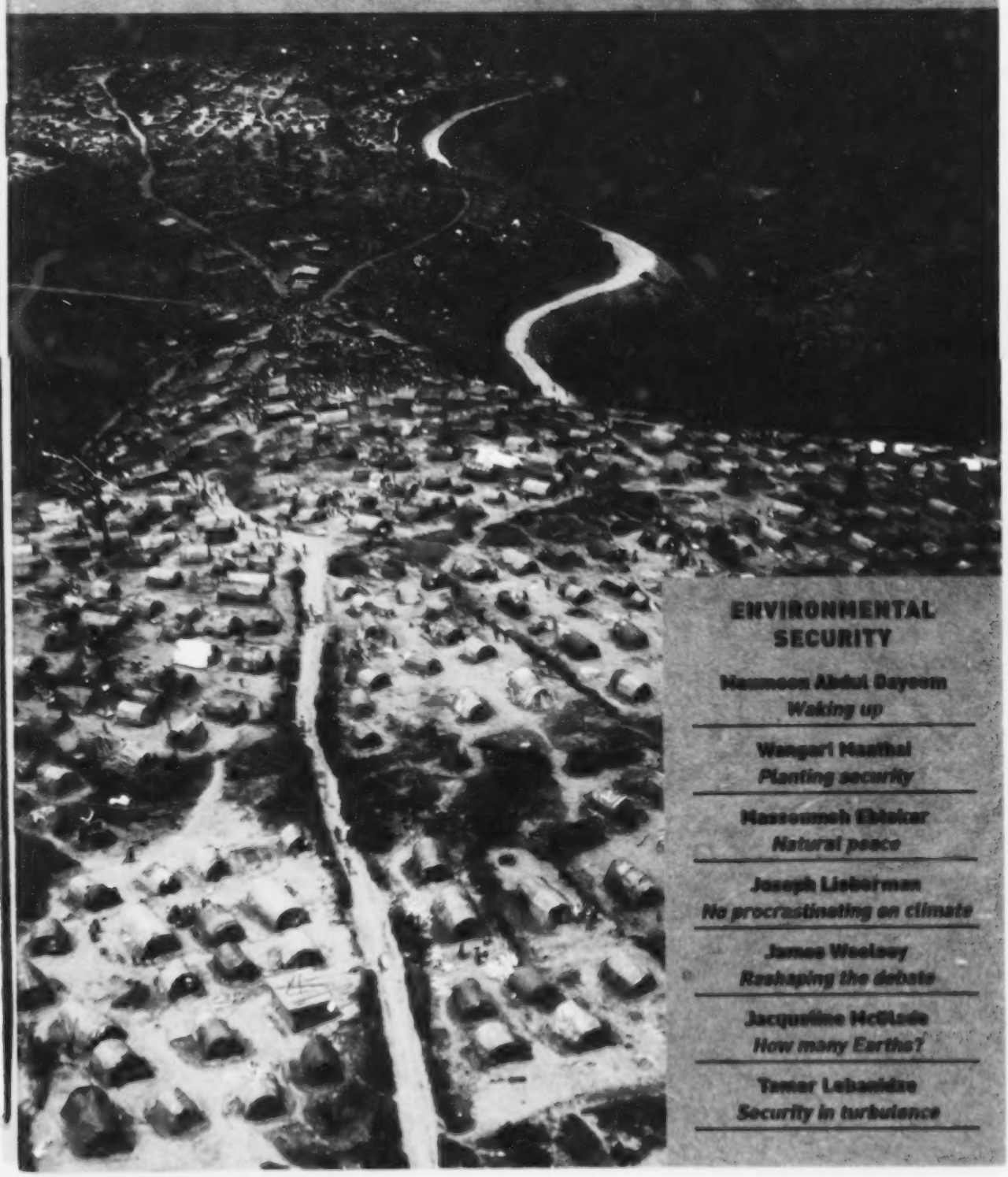

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UNEP Peplum

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From the desk of

KLAUS TOEPFER

United Nations Under-Secretary-General and Executive Director, UNEP

As this edition of *Our Planet* goes to press, the world is still struggling with the aftermath of the Indian Ocean tsunami, which in a matter of hours turned the lives of millions of people upside down. Our first thoughts were with the victims and their families. Our second ones were on the rehabilitation of shattered livelihoods, economies and communities.

We are also now getting a glimpse into the environmental impacts. A recent preliminary report on one of the hardest-hit areas – Aceh Province, Indonesia – conservatively estimates damage and losses to important features like coral reefs, mangroves, seagrasses, coastal forests, river mouths and shallow wells at more than $660 million.

Restoring such habitats or advancing their recovery should be among the global community's priorities once the humanitarian needs are met.

For coral reefs, coastal forests and these other key habitats are not just magnets for tourism, but vital nurseries for fish and sources of materials for local people. Globally, coral reefs generate environmental services worth many billions of dollars a year. They are also natural buffers against aggressive and destructive seas. Indeed, we ignore 'Nature's Wisdom' at our peril, a theme that will be brought into focus at Expo 2005, opening in Aichi Prefecture, Japan, in March.

The key issue is to reduce the potential impact of future calamities, not only in the Indian Ocean, but everywhere. The tsunami was a purely natural event, but one detected by scientists. If an early-warning system had been in place, the loss of life would have been markedly reduced, especially in areas away from the earthquake's epicentre. This is why the United Nations, governments and non-governmental organizations are fleshing out designs for such a system. At the World Conference on Disaster Reduction, which took place in Kobe, Japan, last month, funds were pledged for the telecommunications, buoys and other hardware needed.

The conference also recognized that such high-tech systems are not enough on their own. Education, training and public-awareness packages aimed at different sectors of society, from ministries down to villages, must form part of this project if it is to succeed. UNEP is tabling a specific decision on tsunamis and other weather-related disasters at our Governing Council/Global Ministerial Environment Forum in Nairobi, which I hope governments will back.

Environmental planning

But environmental security and reducing vulnerability go beyond a tsunami warning system for the Indian Ocean, even beyond one covering all possible regional and global calamities. Unless environmental provisions and planning are factored into reconstruction programmes, many communities will remain overly vulnerable to tidal waves, the impacts of climate change and other natural and man-made hazards.

Uncontrolled, unchecked and insensitive development of houses, businesses, hotels and aquaculture in coastal zones may be vulnerable to rising sea levels, storm surges and other phenomena. It may also contribute to the insecurity of coastal communities by weakening or damaging natural sea defences such as coral reefs and mangroves. These precious habitats and ecosystems are vulnerable to pollution run-off and clearance for, say, ports and harbours, shrimp and other forms of mariculture, and tourist resorts.

'Silent tsunamis'

While the tsunami has rightly been the focus of world attention in the past few months, we must not allow the 'silent tsunamis' of poverty, hunger, dirty water and insufficient sanitation to slip off the page. So I applaud the decision of Tony Blair, the UK Prime Minister, to put Africa and climate change at the centre of his country's twin presidencies of the G8 and the European Union this year.

In September, at a high level summit of the General Assembly, governments will discuss the status of the United Nations' Millennium Development Goals. A global plan, outlining how the goals can be met, has been drawn up by experts at the request of Kofi Annan. It argues that environmental sustainability is a critical foundation for ending poverty and that a considerable body of scientific data points to environmental degradation as a direct cause of many of the most pressing issues we face, including poverty, declining human health, hunger, undrinkable water, emerging diseases, rural-urban migration and civil strife.

I hope these findings will enrich and enliven discussion and lead to positive outcomes at our 23rd session of UNEP's Governing Council ■

YOUR VIEWS

We would really like to receive your feedback on the issues raised in this edition of ***Our Planet****. Please either e-mail feedback@ourplanet.com or write to:*
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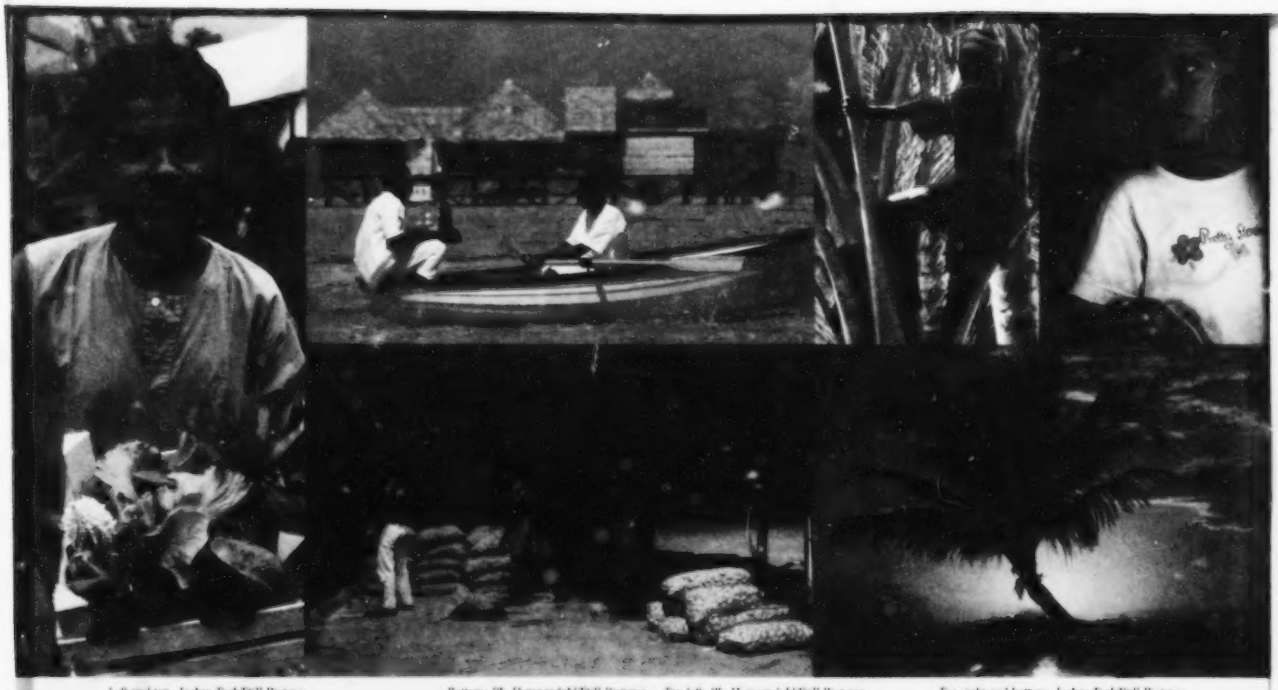


Left and top: Jochen Tack/Still Pictures *Bottom: Ph. Hympendahl/Still Pictures* *Top left: Ph. Hympendahl/Still Pictures* *Top right and bottom: Jochen Tack/Still Pictures*

Waking *up*

MAUMOON ABDUL GAYOOM describes the effect of the tsunami on his country, and warns that global warming poses an even greater threat to environmental security

On 26 December 2004, we woke up to witness the terrible reality of our environmental fragility. The tsunami created by the Sumatra earthquake that morning swept through the entire archipelago of the Maldives with awesome fury, taking lives, devastating infrastructure, crippling our economy and washing away decades of hard work and toil of our people. This disaster was indeed unprecedented – the first of its kind, and the worst natural calamity ever experienced in the Maldives.

Daunting challenges

We have embarked on the formidable tasks of providing emergency relief, rebuilding our lives and livelihoods, and reconstructing our nation. These are daunting challenges indeed: 82 people are known to have died and 26 are missing, and 13 islands had to be completely evacuated. Over 15,000 people have been left homeless and many are facing food and water shortages. Our tourism and fishing industries have been crippled. Of the 87 resorts, 19 had to be closed. These need major reconstruction to operate again. Many islands lost their fishing boats, ruining their primary livelihood asset. The total damage is estimated at well over $1 billion.

The tsunami disaster is an opportunity for us to reflect on the fragility of small island states

As our current focus is on relief and rehabilitation, we have not yet had the opportunity to assess the impact of the disaster on our fragile environment. The signs, however, are ominous. Our island vegetation is gradually dying as a result of the flooding and intrusion of salt water into the groundwater. Any loss of vegetation would further increase the environmental vulnerability of our tiny islands. Even more importantly, according to scientists, our fresh groundwater reservoirs may require several years of rain to recover, replenish and be drinkable.

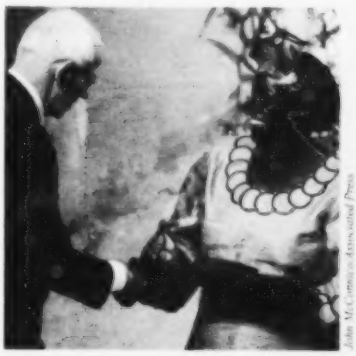
Important decisions

The tsunami disaster is an opportunity for us to reflect on the fragility of small island states and other low-lying coastal areas. It is also a time to make important decisions to avert such catastrophes or minimize the losses of natural disasters in the future. On 26 December 2004, the tsunami waves receded within hours. However, the waves and flooding from sea-level rise triggered by global warming will not recede. The damage will be unspeakable and we will all become environmental refugees.

The Kyoto Protocol has entered into force, enabling us to improve environmental cooperation and achieve targets established for the reduction of greenhouse gases. But, alone, it is not sufficient to deal with what is a bleak environmental future for our countries. We need to do more towards the protection of our global environment.

The tsunami disaster has united the world in a way we have not witnessed for a long time: this unity should be harnessed to create mechanisms to deal with future environmental calamities. It has also shown that ecological catastrophes do not stop at national borders and that they are more damaging to small island states. Thirteen countries on two continents were directly affected by the tsunami, and a number of other nations lost their citizens in the disaster. At this time of global mourning, let us be more strident in forging a global partnership to deal with our common environment ■

Maumoon Abdul Gayoom is President of the Republic of Maldives.



John McConnico/Associated Press

Planting security

WANGARI MAATHAI tells Geoffrey Lean how trees make peace and how deforestation and degradation of the land lead to conflict

Peace and trees were synonymous in traditional African societies. Conflicts were resolved under their boughs, elders carried sticks from them to effect reconciliation, and people even used their names in greeting. 'The African culture was, indeed, a culture of peace built around trees,' says Professor Wangari Maathai, who has caused some 30 million saplings to be planted on the continent.

Now the Norwegian Nobel Committee has updated the connection by awarding the 2004 Nobel Peace Prize to Professor Maathai, the founder of the Green Belt Movement. She is the first environmental activist to win the award, and the first African woman to receive any Nobel prize.

Controversial decision

It was a controversial decision – and it came under attack from some politicians who said that 'a peace prize should honour peace, not the environment'. But Professor Ole Danbolt Mjøs, the Chair of the Committee, retorted in his address at the award ceremony in Oslo: 'Environmental protection has become yet another path to peace.'

The Committee itself was even more explicit. 'Peace on earth depends on our ability to secure our living environment,' it said. 'Maathai stands at the front of the fight to promote ecologically viable social, economic and cultural development in Kenya and in Africa.'

Professor Maathai – who now serves as Kenya's Assistant Minister for the Environment and Natural Resources – talked to *Our Planet* just three days after the ceremony. And she emphasized how the unequal and unsustainable use of the world's natural resources is leading to conflict locally, nationally and globally.

She started with the African trees. 'Many communities in Kenya, and I am sure throughout Africa, had the concept of peace trees,' she said. 'When elders were seeking reconciliation among communities and individuals they would sit around specific trees. Indeed the Luhya people of western Kenya would even greet each other, when they met, with the name of the species they used as a peace tree, *murembe*.

Peace tree

'Among the Kikuyu,' she added, 'the peace tree was a species called *thigi*. It is more of a shrub than a tree, with many shoots. Sticks were cut from the shoots and given to elders as a symbol of authority. The elders carried the staffs everywhere they went. If they found people quarrelling, they would first try to dialogue with them, and – if they then made a judgement that there was no reason why they should be at odds – they would put the stick between them. Once an elder had done that the protagonists were supposed to separate and go and reconcile.' ▶

Sharna Hicks/UNEP/Topham

Trees look great on the land and give people hope

The *thigi* trees were once common and were protected. They could not be cut for anything else, or used for building or firewood. But now they have vanished so completely that Professor Maathai herself has never seen one.

'They disappeared because they were no longer valued and their importance was no longer an issue. People were no longer being made to reconcile by elders in the community. With colonialism that whole structure was destroyed. Now when people collide they are arrested and put in jail. There are no more *thigi* trees and there's a lot more conflict.'

The story could be a parable for environmental security in Kenya, Africa and the world. For as Professor Maathai says: 'When resources are degraded or overexploited, people fight over them.' She has seen it happen in her own country – and it has provided one of her strongest motivations. She remembers, as a child, growing up 'just seeing vegetation all around me: the land was always covered with forests and trees. We did not have a word for desert, because we never saw it.'

She recalls drawing water from a spring 'fascinated by the way the clean cool water pushed its way through the soft red clay so gently that even the individual grains of the soil were left undisturbed' and the 'streams, beautiful streams'.

Today the trees have been cut down for tea plantations and the streams and springs have dried out. 'I feel the tragedy under my feet,' she has said. 'Gullies stare at me, telling the story of soil erosion, unknown before. Hunger is on the faces of the people.'

Now little of Kenya's original tree cover remains, and the overexploitation of the land has already led to conflict. Pastoralists and settled farmers have clashed over use of the remaining healthy areas.

The same process is behind the conflict in Darfur, Sudan, she continues. 'To a certain extent it is a conflict between pastoralists and farmers because the land has been degraded.'

Exacerbating conflicts

Politics can make the conflicts worse. 'The tension can come from overexploitation of natural resources and then be manipulated by politicians, or politicians can instigate disaffection or dissatisfaction that is easily picked up by the people because of the pressure on resources.

'It's a very common thing, but we usually don't think of the environment or the poor management of natural resources, which often happens because of poor governance. If you do not have democracy, or proper distribution and responsible management of resources, you have conflict, and it is so easy to manipulate it. Then people do not say, "Our environment is degraded: what can we do to rehabilitate it?" Instead they will usually go and fight over whatever is left.'

Professor Mjøs underlined the point in his speech at the award ceremony. 'Present-day wars and conflict take place not so much between, as within, states,' he said. 'When we analyse local conflicts we tend to focus on their ethnic and religious aspects. But it is often the underlying ecological circumstances that bring the more readily visible aspects to the flashpoint.' He cited the desertification in Darfur, conflict following deforestation in the Philippines, and the role of soil erosion and deforestation in revolt in Mexico, and added: 'Competition for minerals has been an important element of several conflicts in Africa in recent years. Competition for timber has figured prominently in Liberia, in Indonesia and in Brazil.'

Professor Maathai started the Green Belt Movement in 1977. Local people were at first sceptical, but 'when the trees were planted and started growing they became the best ambassadors for themselves.

'They have this wonderful way of communicating with the communities. Trees look great on the land and give people hope. The people know that within no time they will have firewood and timber. There is shade. There is no dust. They can see it's a good investment.'

As the movement spread Professor Maathai ran into increasing opposition from the government of the time, and herself became a leading opposition activist and was beaten up and imprisoned. She returned to the old traditions, planting 'peace trees' to demand the release of prisoners of conscience, and to reconcile ethnic conflicts in Kenya – and says they have also been planted 'to promote a culture of peace' during the rewriting of the country's constitution.

She concludes that environmental degradation in Africa and elsewhere is beginning to lead to international tensions. 'The migration from South to North is partly because the migrants are leaving behind a very degraded environment because they have had very poor governance and a very poor distribution of resources. There can be no peace without equitable development, and there can be no development without sustainable management of the environment in a democratic and peaceful space. I hope that this prize will help many people see the link between these three things.' ■

Natural **peace**

MASSOUMEH EBTEKAR stresses the crucial, neglected role of the feminine factor in achieving peace, environmental protection and sustainable development

Our new age is characterized by rapidly increasing, previously unknown, features driven mainly by the cumulative results of human technological advance. The information revolution has permeated human life, thought and consciousness like no previous technical phenomenon. The information superhighway has enabled people worldwide to access knowledge and news, and promoted the awareness needed to make informed decisions and choices.

Trends in global opinion can now be identified which indicate how people generally think, irrespective of their governments' policies. International reporting and reliable global statistics have evolved to expose previously unknown and underlying trends. The broad anti-war sentiment expressed through the media, mass demonstrations, international forums and organizations, civil-society institutions, and through the arts, is a vivid example.

International reporting and statistics also provide empirical evidence that such worldwide trends as widening economic gaps between rich and poor, tribal and ethnic strife and conflict, and environmental degradation have worsened, or at least not improved. There is general understanding that these tendencies in many parts of the world are leading to a heightened sense of insecurity and a loss of direction for both individuals and societies. An increase in unsustainable trends is confounding our enormous and unprecedented advances in information, and threatening human existence as never before. It is creating imbalances and strife in nature, in human societies and within individual psyches.

Essential prerequisite

Now, more than ever, everyone longs for a world at peace. So much has been said about its importance. Vast treasures have been spent for the rule of peace. Countless politicians have come to power – and too many wars have been waged – in its name. Peace – elusive as it may be – is universally recognized to be an essential prerequisite for sustainable development, the eradication of poverty, the advancement of societies, the enhancement of the quality of life for both men and women, and increased standards of living.

Prominent academic and international organizations are beginning to recognize, acknowledge and appreciate the interrelatedness of peace, the feminine factor and environmental protection – as indicated by the award of the Nobel Peace Prize to a woman environmentalist from Africa, Professor Wangari Maathai.

The current world order has increased the incidence of violence, aggravated instability, and deepened the sense of regional and global insecurity. We need to address the underlying causes of the current global circumstances and opt to improve or change the root factors that have created the havoc. This requires not just a new vision and paradigm in dealing with social, economic, security and environmental issues but a deeper commitment inspired by clear ethical principles.

Underlying principles

Diplomatic and political remedies have not resolved the dilemmas or changed the trends. It could be time to revisit the underlying principles that shape decisions and influence the global order. Politics as usual, and professional politicians in particular, apparently lack the answers so urgently needed. The politics that we have known cannot be those of the future – or there may not be one.

We have set standards for good governance at the national level, while many mechanisms work to promote coherence and order at global and international levels. But the ethical element is the key ▸

Shahzad Nasir/Still Pictures

Now, more than ever, everyone longs for a world at peace

factor in seeing our responsibilities through, and in ensuring the accountability of governments and major stakeholders.

When we see double standards and injustices at the highest levels of global and national governance, and when we witness a certain arrogant determination reaping the final fruits in many global equations, a crystal-clear reality emerges. It tells us that the root of the problem is within ourselves, and in the way that we have evolved and accepted methods of learning to cope with the requirements and restraints of the post-modern age by denying certain intrinsic traits.

A consideration of C. G. Jung's analytic psychology could shed some light. His ideas are very relevant to the psyche of the modern materialist man that shapes the world economy and politics – and to how it affects the concept of peace and sustainable development. He held that archetypal ideals of conduct can be defined to reflect personal psychology. The anima is defined as an inner feminine part of the male personality, the animus as the inner masculine part of the female one.

The conditions of modern life – the corporate lifestyle of urban working groups, the rigid and ruthless race for money and jobs, the unequal status of social groups, particularly the marginalized – have created an elite class in every country that governs social, economic, state and corporate affairs. It has evolved to rule, guide and manage, whether in democratic systems or autocratic settings – and shapes the state and mentality of all societies.

Ruling elite

This growing elite adopts control-specific techniques in order to compete, be accepted among its peers, stay in power and manage its affairs. As a rule, these many men – and few women – have learned to manage and suppress their inner anima while strengthening their animus traits to promote themselves in relentless social and economic competition.

Vivid expression of feeling, concentration on detail, looking for the connotation behind phenomena, wondering about tomorrow more than today, and a certain creative moodiness and trendsetting in lifestyles are anima traits that are generally unwelcome in the political and executive circles that govern the world. Women need to deny them to be accepted in social, economic and, particularly, decision-making spheres. The few men who exhibit them are regarded as exceptions and are usually unappreciated in governments and corporations.

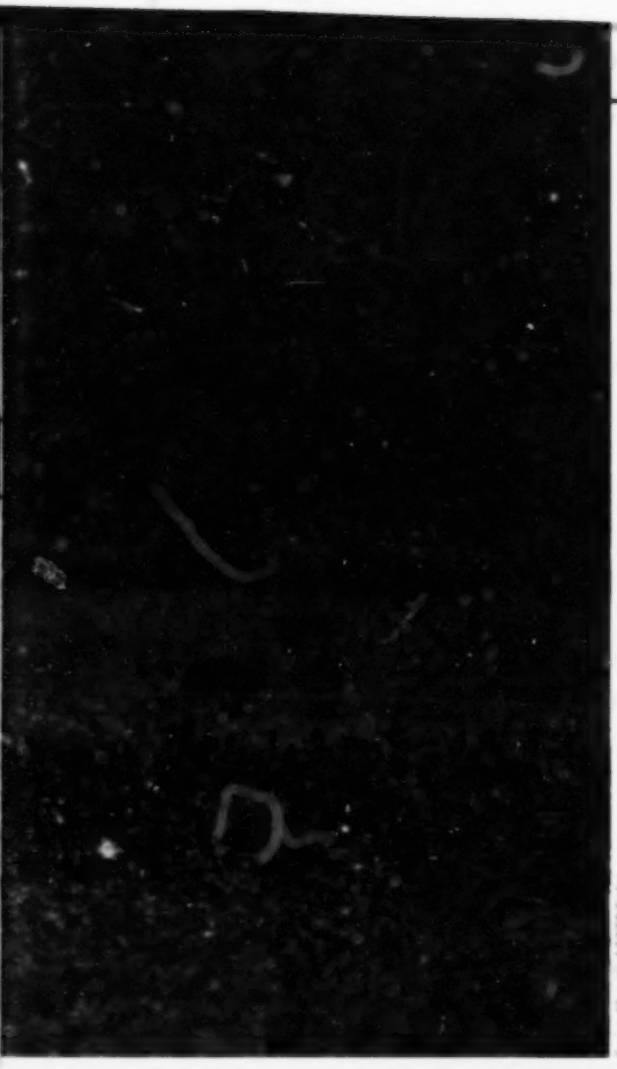
Recent studies point to the importance of inspiration and emotional intelligence as motivating factors in organizational management; but, in practice, inspirational leadership – relying on feminine archetypes for management – remains a very remote concept. The reins of decision making are held by the wealthy to increase their wealth, by the powerful to increase their power and by the lustful to sustain their pleasures.

Once politics deny the vibrant and emphatic expression of feelings and the spirit behind life, wars become routine – even against defenceless civilians. Crimes against humanity arouse few reactions in the diplomatic circles mandated to stop them: more energy seems to be spent in denying than uncovering them. Human dignity and life is all too easily and carelessly lost, while nature becomes the foremost victim.

Moody and sensitive archetypes bring vivacity and colour to life. Their responses to outrages against society and the environment pulsate with a higher consciousness of commonweal. They create hope and inspire people. Their aspirations are in harmony with nature and with the spirit of life, for the anima is its caring, nurturing and altruistic dimension. Yet the routine software programming of our age and the comfortable refuge of fast-food technologies leave no room for the dynamic tensions of the moody or for breaking the fault-ridden mindsets that have closed in on human life and the spirit of humanity. The rush for 'doing' and working has not left any time or priority for simply 'being'.

To compensate for this outright denial of the feminine spirit, economic and business concerns have programmed the globe for the commodification of bodies, the obsession with looks and the sex trade. The aspects of feminine traits that convey instant pleasure and appeal have been increasingly advertised while the anima that may arouse the sleeping conscience in both men and women is avoided and frequently denied.

The crucial details that make the whole picture – the scent of the cedar, the humming of wetland birds, the passive anxiety of urban children and the brutal treatment of wildlife – have become irrelevant to the ruling elite. They have to attend to the more important affairs of governing and ruling the world, sorting out economic conflicts and establishing the promised global order. News of civilian killings and acts of terror and violence have



numbed the sensory receptors of those who profess to advocate democracy and human rights. The alarming rates of corruption in many governments and corporations point to a morally impoverished ruling elite that denies its anima in order to promote its priorities.

The relentless human spirit has been denied for the sake of a predetermined and largely unquestioned school of reasoning – and the narrowly contemplative mind it begets. One of its commandments is that all beliefs are confined within the material and tangible. Another is to deny the feminine traits that are the secrets of life and motivating factors for individuals and societies – and to bar critical discussion of the enormously high price paid for this singular contradiction. The multidimensional anima archetypes have given place only to the animus, upsetting the inner equilibrium of individuals – and hence societies. Our selfish pleasure-driven self has led us to deny eternity for the sake of the moment.

Government and business leaders need inner peace to promote peace among societies. Lacking inner peace and equilibrium, we seek in vain to make peace, prosperity and security work in the world. We have denied our inner selves, our natural god-given traits, and so find ourselves at war with nature, with the laws and regulations of creation. Our environment is responding negatively to our inner restlessness, to our selfishness, greed and arrogance. Even as we struggle for peace and security, the outcome does not measure up to the effort. Sustainable livelihoods are at risk until the vicious cycle of poverty and environmental degradation is eradicated.

Inner peace

Throughout history, leaders, Eastern philosophers and thinkers have pointed to the need for inner peace. *Nahj-ul Balagha* – a compilation of the eloquent words of Ali Ibn Abi Talib, the outstanding Islamic leader after the Prophet Muhammad (SA) – makes a direct reference to the forces and temptations which shape the human psyche: 'The ego is like unto a wild stallion, if not tamed and guided by wisdom, it will take itself and its rider to the depths of an endless chasm.' This description of the need for a balance between inner forces and taming them with the reins of wisdom is the key to inner peace in Islamic ethics.

In the words of the 12th century Iranian philosopher Sohrevardi, human betterment and advancement is based upon reasoning and knowledge, as well as on spiritual uplift and purification. Both the realms of reason and knowledge and of the spirit must be strengthened to achieve inner balance: a coherent tie between them could enable the inner peace that humans seek.

Women decision makers in global affairs may be able to contribute to peace, security and sustainability if they appreciate their profound potential as educators, mentors and role models in promoting peace of mind and heart. More important is a return – in men and women alike – to the balance between anima and animus, between the body and the spirit, between the heart and the mind, and between inner temptations and ethical concerns. Inner peace is elusive while the corporate powerful and wealthy only pursue their profits in global equations and media policy. We need to work to define and promote a culture of inner peace and equilibrium, through the media, and through effective cultural and international mechanisms.

The need to prevent confrontation – whether ethnic strife, aggression against a neighbour, occupation of a homeland, or blind and ruthless terror – is tied to the need to promote inner peace and understanding among people. The concept of 'Dialogue among Civilizations', proposed by President Mohammad Khatami, rests on the need to turn the imminent confrontations between the East and West, between the North and South, between the wealthy powerful and the poor and weak, into balanced relationships of just distribution of wealth, protection of natural resources, dialogue, tolerance and understanding as opposed to force and oppression.

Can we help women, men – and, particularly, youth – to recognize the incredible and indispensable role they have in promoting sustainable development, peace and security?

Those who enjoy peace of mind and heart can bring the anima and spirit back into government governance structures. They can restore balance in global policies. They can ensure the sustainable aspect of development. They can provide inspirational leadership to change decision-making processes, to shift and change parameters and mindsets, and to create a fresh vision for young people who aspire to live in a better world ■

Massoumeh Ebtekar is Vice-President, and Head of the Department of Environment, of the Islamic Republic of Iran.

PEOPLE

©Rolex Awards/Matias Pulenman
Claudia Feh

Claudia Feh, *who is reintroducing the Przewalski horse to the Mongolian steppes, has won one of the Rolex Awards for Enterprise for 2004. She has been raising the world's only natural herd of the horses – the last truly wild equine species on the planet – in France for the past decade, and last September began re-establishing them on the plains where their close relatives roamed in prehistoric times.*

At the age of 19 she was inspired to study wild and semi-wild horses by seeing the 17,000-year-old cave paintings of Lascaux, southwest France: the large head, and upright bristly mane, of the Przewalski horse looks strikingly similar to those pictured there. In Mongolia the takh – as the Przewalski horse is known locally – was regarded as sacred. But the last of them seen living in the wild was spotted there in the mid-1970s.

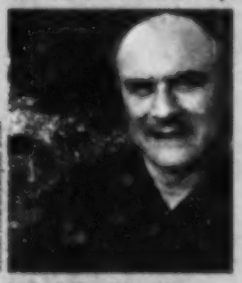
*Feh, who originally comes from Switzerland, has chosen the horse as the focus for an integrated conservation project, starting in August 2005, based on habitat protection and restoration, in close collaboration with Mongolian nomad families. **Dr Patricia D. Moehlman**, chair of the IUCN Species Survival Commission Equid specialist group, described the initiative as 'very original and innovative' and adds: 'This is the first reintroduction programme that I know of that, from the start, will provide in-depth education for local people.'*

©Rolex Awards/Klaus Lenzel
Lonnie Dupre

***Lonnie Dupre**, a US explorer, won another of the awards, which are given every two years to recognize pioneering concepts and innovative thought. He will use it to help fund an attempt he is making with fellow explorer **Eric Larsen** to achieve the first-ever crossing of the Arctic Ocean in the perilous summer season, without any external support. They are making the 2,250-kilometre journey across the top of the world by kayak and on skis to draw attention to the threat of global warming, particularly to the Arctic and its ecosystems.*

©Rolex Awards/Klaus Lenzel
Teresa Manera

*A third Rolex award winner, **Teresa Manera** from Argentina, was recognized for her struggle to preserve a unique 12,000-year-old collection of animal footprints existing as fossils on a rocky outcrop on the coast of her native Argentina. The 3-kilometre-long site, which contains thousands of prehistoric footprints, is now under threat from sea-level rise and tourists. Manera is trying to preserve the prints in latex so that scientists can study them.*


©Rolex Awards/Jacques Bilat
Dr David Lordkipanidze

*A somewhat similar award goes to Georgian palaeoanthropologist **Dr David Lordkipanidze**, who discovered the bones of the earliest known human ancestors to venture out of Africa, at Dmanisi in the Southern Caucasus. He has waged a decade-long struggle to uncover, substantiate and protect this fresh evidence about the origins of humanity. **Professor Oleg Soffer**, of the Department of Anthropology at the University of Illinois, says that his is 'the most important palaeoanthropological research project around today'.*

*Silk expert **Kikuo Morimoto** wins the final award for setting up workshops in Cambodia to revive traditional production in impoverished villages and act as a model in revitalizing the rural economy. He has replanted mulberry trees on which the silkworms feed, revived traditional weaving and dyeing with natural colours, and provided profitable work for hundreds of people ■*

©Rolex Awards/Xavier Lecoultre
Kikuo Morimoto

At a time of increasing membership and engagement with new sectors, including business, and new issues, such as poverty reduction, former South African Minister of Environmental Affairs and Tourism, Valli Moosa, has become President of IUCN – The World Conservation Union. 'Conservation is everybody's business,' says Moosa. 'We will succeed if we continue to broaden our scope and involve more people' ■

©WWF-Canon/Jean-Luc Ray
Dr Claude Martin

***Dr Claude Martin** has announced his resignation as Director-General of WWF International after over a decade at the helm of the global organization. He has spent more than 30 years with WWF, starting in central India in the early 1970s, moving to Ghana for several years, and in 1980 becoming director of WWF-Switzerland – which emerged, under his leadership, as one of the strongest national organizations within the WWF network. After serving as Deputy Director General (Programme) of WWF from 1990, he took up his present post in 1993 ■*

No procrastinating *on climate*

JOSEPH LIEBERMAN calls for leadership to accept the challenge of global warming and use market forces to reduce emissions

Global warming is one of the great challenges of our time. Greenhouse gas emissions from the burning of fossil fuels threaten our environment, of course, but they also threaten our economy and our public health. They also represent a challenge to political leadership. Public officials must be prepared to look at the science, face the facts and do something about a problem that is appearing, but whose most difficult, and potentially devastating, consequences are still over the horizon.

We must come to grips with the facts about the need for a new energy policy. Global warming will force us to change the way we produce and consume energy. It is time to accelerate the world's transition to cleaner, more efficient energy sources. As the largest emitter of greenhouse gases, we in the United States must show that we are accepting our responsibility to be part of the global solution to this global problem.

Confronting climate change will also help to address growing concerns about our national energy security. As developing economies like China and India rapidly grow, so does their demand for cheap oil, creating greater pressures on an already tight market for a finite resource that lies predominantly beneath nations troubled by terrorism and who are not our strongest allies.

Creating a market

For its part, the United States can sharply reduce its dependence on fossil fuels and deploy cleaner energy production through policies based on free-market principles. That is why my colleague in the US Senate, John McCain, and I introduced the Climate Stewardship Act, and will do so again in the new Congress. This legislation would require a reduction in carbon dioxide emission levels to 2000 levels by 2010, by capping the overall greenhouse gas emissions from the electricity generation, transportation, industrial and commercial sectors, creating a market for individual companies to trade pollution credits.

From a purely economic analysis, one big reason the United States does not turn away from the unsustainable and environmentally damaging use of energy is that the full impacts of our usage are not included in the price. By putting a market price on damaging greenhouse gas emissions, our bill would provide such a pricing mechanism. This would drive private-sector investment toward non-fossil fuel, non-emitting technologies by simply restructuring the market to recognize their value.

Our proposal has its roots in the acid rain trading programme established in 1990. I worked on developing the 'cap and trade' programme to control the sulphur dioxide emissions from power plants that were destroying forests, waterways and wildlife with acid rain. At the time, the energy industry complained it would cost them more than $1,000 a tonne to comply with the 'cap and trade' plan.

But – using the same flexible, market-based system that we propose to use to ▸

Attracting private investment

The board of the United Nations Foundation (UNF) has recently approved two grants, totalling $1,250,000, to attract private-sector investment to projects that promote sustainable development through alternative energy resources and other approaches.

Footprint Neutral

Footprint Neutral will receive $750,000 in UNF funds to create an innovative public-private partnership to attract investment in projects that mitigate climate change while providing conservation and development benefits. It is modelled on a successful pilot project by BP, the leading global energy business, and the Commonwealth Bank in Australia. In this, the extra money paid by consumers for 'BP Ultimate gasoline' was invested in projects to offset the effects of its use.

The partnership aims to attract corporations, municipalities and other partners to invest in projects that offset their impact on the global climate by developing and marketing portfolios of alternative energy and carbon sequestration initiatives.

Addressing global environmental problems and alleviating poverty requires the engagement not only of the government, but also of businesses and consumers, and the ingenuity and resources that they provide. Footprint Neutral is an innovative new mechanism that provides opportunities to achieve this.

Sustainable Energy Finance Initiative

The Sustainable Energy Finance Initiative (SEFI) will receive $500,000 from the UNF and an additional $250,000 from the Italian Ministry for the Environment and Territory (IMET). Designed and implemented by UNEP and the Basel Agency for Sustainable Energy, it will attract financing to sustainable energy development. Inadequate information and insufficient experience – coupled with the lack of tools needed to quantify, mitigate and hedge project and financial risks – have in the past constrained capital investment in renewable energy and energy efficiency.

The UNF and IMET grants will be used to establish SEFI's operational and governance structure; to create a communications and outreach strategy; to develop information resources for financiers; and to build partnerships through a Global Sustainable Energy Finance Conference, a UNEP Finance Initiative Renewable Energy Working Group and an Export Credit Agency Renewable Energy Initiative.

Through these diverse activities SEFI will both enhance understanding about emerging renewable energy and energy efficiency financing opportunities, and develop the tools and partnerships needed to minimize investment risk and build investor confidence.

Melinda C. Kimble
Senior Vice President for Programs
United Nations Foundation

address global warming – those emission credits sell today for just $128 to $260 a tonne. Critics were way off then. And they are way off now with their predictions of sky-high costs if our bill becomes law.

In fact, a recent study from the Massachusetts Institute of Technology estimated that our bill would cost approximately $20 per household per year. That is just over 5 cents a day for a family of four. Another study by the Tellus Institute predicted that our legislation would save Americans $48 billion by the year 2020 because of reduced energy demand.

If we continue to procrastinate on climate change, the price tag will grow. Preventive actions that reduce climate change will most certainly cost less than adapting our civilization to the dramatic changes expected. Moving coastal cities, rebuilding infrastructure, and relocating homes and families will be disruptive and expensive. In fact, because of uncertainty about the growing risk of severe weather events and other potential effects of global warming, insurers are charging higher premiums to businesses and homeowners to cover expected higher costs. Such continued uncertainty hinders economic activity across the board, and prevents corporations and investors from making sound decisions.

Business opportunities

Contrast this with the potential economic benefits from tackling global warming. The world's need to shift to lower-emitting energy technologies will create vast new horizons of business opportunities. The potential economic rewards of confronting climate change outweigh the risks – and realizing these rewards could be the source of a country's global competitive advantage. Over the next 20 years, $10-20 trillion will be spent globally on new energy technologies.

Environmental protection and economic growth are not mutually exclusive; they are mutually reinforcing over the long run. Measured steps to curb global warming in a business-friendly way promise not only to save us from environmental degradation but to open new opportunities and to spur innovative new technologies for American business to seize.

Passing the Climate Stewardship Act is step one for the United States. Step two involves making it work. And that will

require leadership at all levels across the nation. Often when we talk about creating these kinds of national efforts, we use wartime analogies. I want to use a peacetime model – the race to the moon.

The lunar programme is an apt model for the broad mobilization we need today to address global warming – and to show this will help, not hurt, the economy. A healthy environment and a thriving economy are goals in concert, not conflict. We took existing technologies and made them better, more powerful and less expensive to achieve a historic breakthrough – putting a man on the moon.

Fuelling innovation

Many of these improvements, innovations and inventions then worked their way into the economy – spurring growth, creating jobs, and fuelling global scientific and technological innovation.

That is precisely where we stand now in the challenge to face global warming.

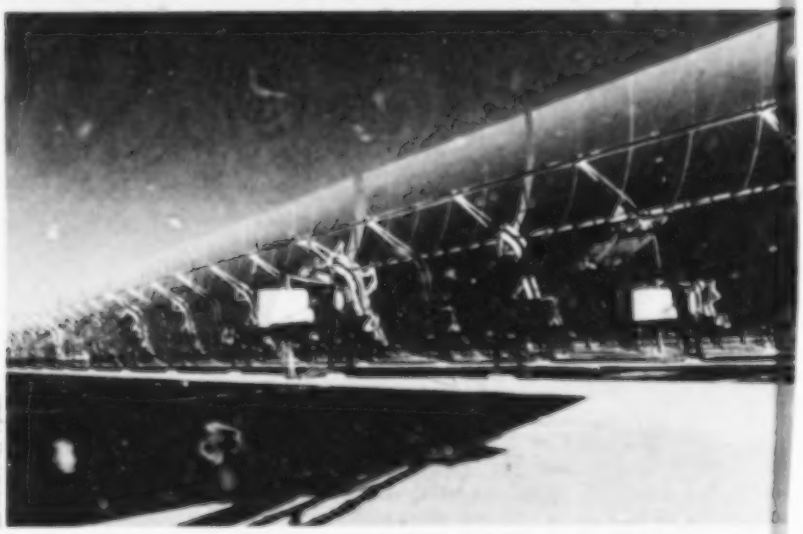
We know how to make fuel cells and solar panels. We know how to make coal-burning energy plants less polluting. We know how to make cars and trucks that are safe and comfortable – and less polluting and less fuel thirsty.

What is required of us now is to create an atmosphere that will drive and nurture the development of these technologies. In the United States, the Climate Stewardship Act does just that by creating a market that makes greenhouse gas reduction valuable. And just like the lunar programme, bringing these innovations to market will spur the economy and create jobs.

Consider the costs and consequences of inaction, for they will ruin the economy with a far more destructive certainty than any greenhouse-gas control programme ever could. Imagine the costs of fighting the rising seas overtaking our cities and towns in low-lying coastal areas. Imagine the cost when crops on now productive farmland – in this country and around the world – shrivel and die from withering heat and droughts. Imagine the famine.

Imagine the medical costs to treat insect-borne diseases that are now rare. And imagine the cost of the severe regulatory programme we will be forced to enact if the environmental impacts of global warming arrive here uncontested.

Our nation and, indeed, our planet cannot wait for us to stumble toward an answer. The consequences and costs of inaction are too great. We know there is a long and menacing shadow marching toward our shores – toward our cities and towns. But we know that if we act now, global warming is not a conqueror to be feared – but a challenge to be met.



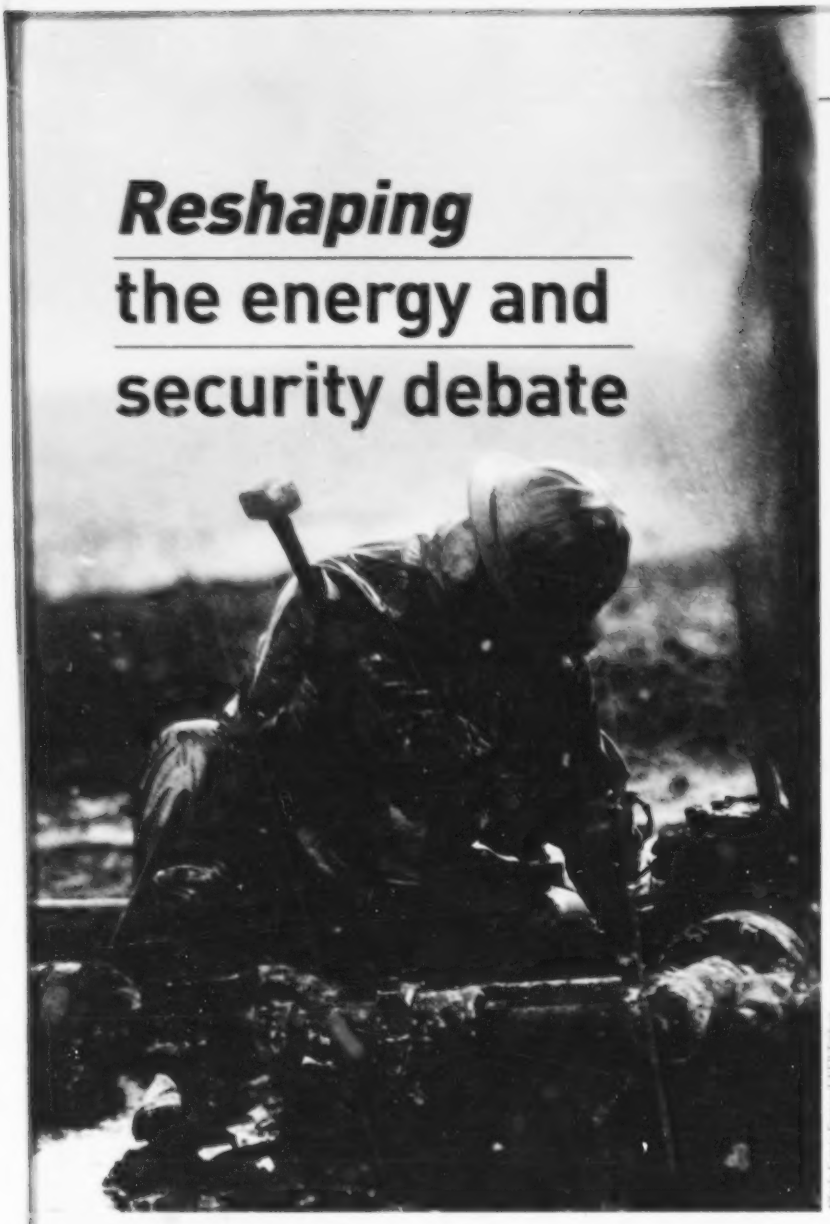
In Scripture, it is written that the Earth is the Lord's and the fullness thereof, which is surely the truth – and reminds us we are only visitors. We must remember that we do not own the Earth. We are blessed to live on it for some period of time. With that time comes a responsibility to be good stewards of the Earth.

We must rise to this challenge. For us to do less now – when so clearly confronted – is to dishonour our past, disgrace our present and devalue our future. Global warming is a problem we needed to start dealing with yesterday. We must get started today. We cannot wait until the day after tomorrow ■

If we act now, global warming is not a conqueror to be feared – but a challenge to be met

Joseph Lieberman is a United States Senator from Connecticut. He was the Democratic nominee for Vice President in 2000.

Reshaping the energy and security debate



Alfredo Garcia Fonseca / AFP / Topfoto

R. JAMES WOOLSEY outlines the dangers of dependence on oil and points to increased efficiency and alternative fuels as the answer

The world's oil market and its transportation infrastructure should be at the centre of the debate about energy and security.

Electricity generation, for now, is a separable issue. Of course we need to choose wisely the methods we use to generate electricity to limit pollution and the emission of global-warming gases. And we must make our electricity grids more resilient in order to make them less likely to fail catastrophically – whether from accidents or terrorist attacks. But until the advent of a 'plug-in' feature for hybrid gasoline-electric vehicles (discussed below), electricity choices will, for most countries, have only a modest effect on oil use and hence on security.

The United States produces only about 2 per cent of its electricity from oil. It could move decisively to increase, say, wind power for electricity generation or deploy a clean form of using coal (such as the integrated gasification combined cycle) but, however wise, such improvements would have only the most limited effect on oil dependence now. And whether today or in the future, it does not substantially improve security to shift purchases of oil from one region of the world to another. We are all essentially in a worldwide oil market together, so for the United States to buy less from the Middle East – and then for Europe, for example, to buy more there – only reshuffles trade patterns.

Transportation fuel

Oil is, of course, also used for chemical feedstocks and heat, but it is predominantly a source of transportation fuel. And it is this use that drives the world's oil dependence.

This dependence is a serious problem, for several reasons. As the world's demand for oil increases – especially in light of the economic growth we are seeing in India and China – its price is most likely to increase substantially. Deposits of unconventional oil – such as heavy oil and tar sands in Canada and Venezuela – are huge, but currently extraction is not only expensive but causes serious environmental problems. At least two thirds of the world's reserves of conventional oil are concentrated in the volatile Middle East and nearby areas (Iran, the Caspian Basin). Thus oil's production and refining infrastructure is not only subject to terrorist attack, but the reliability of various states as a source of supply could be in question in the event of chaos or radical changes in government.

Oil use contributes, of course, to pollution and to the release of global-warming gases. And as Senator Richard Lugar and the author set out in *Foreign Affairs* six years ago, oil imports into developing countries – denominated in hard currency – drive the build-up of such countries' debt, which is often a major source of their inability to climb out of poverty.

Other aspects of international economic stability are also heavily influenced by oil. The current weakness of the dollar has produced widespread concern about a possible flight

from it, and a sharp reduction in US imports, to the detriment of many countries' economic stability. The dollar's weakness is intimately related to the US current account deficit, which builds at the rate of around $10 billion per week. About $2 billion per week of that borrowing is for oil imports.

Changing focus

In this context two reports published in late 2004 make major contributions toward changing the focus of the somewhat sterile debate about oil and security. Their recommendations for action overlap on most key issues, and some highlights follow.

'Ending the Energy Stalemate' published in December by the National Commission on Energy Policy (funded chiefly by the Hewlett Foundation) proposes some deadlock-breaking paths. First, it recommends that the United States 'significantly raise' its fuel economy requirements, while allowing manufacturers to trade fuel economy credits among vehicle categories and among one another. The proposal also introduces the concept of a 'safety valve' for industry, permitting manufacturers to purchase credits from the government at a predetermined price. It thus seeks to have the US government mandate improvement but within a highly flexible framework.

Within this system, the Commission suggests that the most successful near-term technologies that should be promoted to improve fuel economy are hybrid gasoline-electric vehicles and advanced diesels – the latter limited to those that meet the more stringent 'Tier 2' air quality standards being phased in between 2004 and 2008. The Commission tersely states that, on the other hand, 'hydrogen offers little to no potential to improve oil security and reduce climate change risks in the next twenty years'. It focuses instead on vehicle and fuel changes that can radically reduce oil dependence in the next few years and that, unlike hydrogen fuel cells, do not require major changes in transportation infrastructure, such as installing equipment to produce hydrogen at all filling stations.

Attractive characteristics

The Commission particularly notes two attractive characteristics of current gasoline-electric hybrids. First – for the four hybrids that have conventional vehicle counterparts (two Honda, one Ford, one Toyota) – the hybrid version increases both fuel economy and horsepower over the conventional version: consumers need not choose between economy and performance. Second, hybrids lend themselves easily to adding a somewhat larger battery pack, making possible a most useful 'plug-in' feature: this means the hybrid could have its battery topped up by being plugged in to an electric power source when not in use. Thus electricity could be used entirely as a substitute for gasoline or diesel for many short trips without the vehicle having the disadvantages and inflexibility of an all-electric car. Plug-ins could thus substantially further reduce our reliance on oil.

In the second fascinating report, 'Winning the Oil Endgame,' the Rocky Mountain Institute (RMI) proposes

We are all essentially in a worldwide oil market together

substantially increasing the already growing use of carbon composites for automobile construction. These combine strength and light weight, but at less demanding levels than for aircraft – e.g. 80 per cent of the strength of aircraft composites at 20 per cent of the cost. Thus they can radically reduce weight and increase mileage while also enhancing safety. Again, technology can make it possible to avoid the need to choose between positive features.

Both reports also praise the potential of two types of alternative fuels: cellulosic ethanol and biodiesel produced from organic wastes. Both are now beginning to be produced commercially.

Cellulosic ethanol produced from agricultural waste, such as rice straw, or from perennial grasses, has many advantages over starch-based ethanol (for example from corn). Not only are feedstocks available in very large volume worldwide (and to many small and subsistence farmers around the world), but the small amount of energy needed to produce such ethanol – and the use of some portion of the waste for co-generation of electricity – can, according to the Commission, make its production and use a carbon 'sink.' This creates 'greater than 100 per cent' greenhouse gas reductions compared to petroleum use.

Economic significance

Biodiesel, currently being produced from offal at a turkey-processing plant in the United States, can now be derived from a wide range of organic waste feedstocks, including manure, household waste and used tyres. This has the potential to lower production costs substantially, by taking advantage of fees paid for waste disposal. The National Commission and RMI both note the potential economic significance of such waste use.

Using already developed technologies for vehicles and alternative fuels, where both are compatible with the existing transportation system, gives promise of early, even striking, results. For example, a hybrid fuelled by (cellulosic) E-85, i.e. 85 per cent ethanol, would travel more than four times as far on a given volume of petroleum as a conventional vehicle. If it is given a plug-in capability and thus uses only electricity for short trips, it could easily get around eight times the mileage. Build it with RMI's proposed composites, and the light weight increases its mileage by a factor of 12. And a diesel vehicle that uses biodiesel made from organic waste is using no petroleum at all.

As RMI puts it, we should recognize that 'whatever exists is possible'. That spirit can fundamentally change for the better not just the debate but the very nature of our oil dependence and our security ■

R. James Woolsey, a former Director of Central Intelligence, was a member of the National Commission on Energy Policy and serves on the Advisory Council of the Energy Future Coalition.

Photo: Topfoto

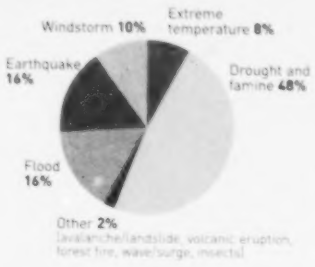
At a glance: Environmental Security

The tsunami which devastated countries around the Indian Ocean last December tragically brought home the importance of environmental security. For it showed that – despite all humanity's attempts to achieve political, economic and even military security – it can still be overwhelmed by the forces of nature.

Even before the tsunami's appalling toll, 2004 was shaping up to be a record year for natural catastrophes. Preliminary figures estimated economic losses from hurricanes, typhoons and other weather-related disasters in just the first ten months of the year at $90 billion dollars, approaching the highest annual level on record.

The number and cost of natural disasters – storms, droughts and floods – have been steadily rising over the last half century. How much this is the result of human activities is unclear. Certainly, the earthquake that caused December's tsunami was an entirely natural event; but some early

World deaths by type of natural disaster, 1994-2003



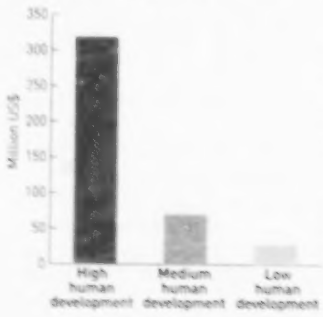
Source: ICRC/World Disasters Report 2004

World deaths and people affected by disasters, 1994-2003 ('000)

	Deaths	Affected
High human development	59	41,546
Medium human development	286	2,369,029
Low human development	328	171,676

Source: EM-DAT, CRED, University of Louvain, Belgium

Economic damage per reported disaster, by human development country groupings, 1994-2003



Source: ICRC/World Disasters Report 2004

Indian Ocean tsunami: 26 December 2004 (figures as reported 1 Feb 2005)

Source: UNEP-WCMC, BBC

World disasters by human development country groupings, 1994-2003

Source: ICRC/World Disasters Report 2004

reports suggested that areas which had kept their mangrove forests and had healthy coral reefs were less badly affected than similar ones where they had been destroyed.

Similarly, it cannot be said that the growing numbers of storms, droughts and floods are definitely caused by the global warming that has so far taken place, but increasing population and development in vulnerable areas have certainly increased their toll. What does seem clear is that if climate change accelerates, natural disasters will break new records; indeed, the resulting sea-level rise would make even a repeat of the tsunami more devastating.

Meanwhile growing overuse of resources is bringing new tensions. Wars are as old as civilization; their numbers vary from year to year. But increasingly conflicts are occurring within countries, and are often fuelled by such environmental factors as desertification, deforestation or competition for resources.

This may spread internationally, for key resources are becoming scarcer and more contentious. By 2025 two thirds of the world's people are likely to live in countries with water shortages. Remaining fossil fuel reserves are increasingly concentrated in relatively few countries – not usually those with the greatest demand. Food production per person has levelled off, and stocks are falling.

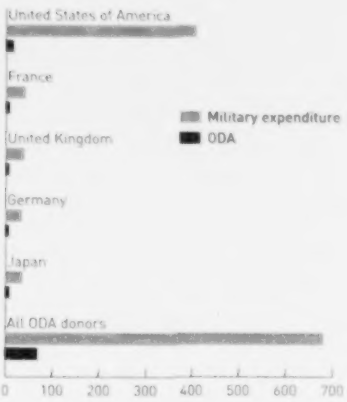
The tsunami evoked remarkable solidarity around the world, as millions upon millions rushed to donate to appeals, provoking their governments to generosity. Yet the developed countries have far to go to meet official development assistance goals – and what they do provide is dwarfed by military spending. We owe it to the victims of December's tragedy to realize that the only true security is to be found in seeking harmony with other peoples and with nature, and to reorder our priorities accordingly.

Geoffrey Lean

Ongoing global conflicts of low, medium and high intensity, 1945-2004

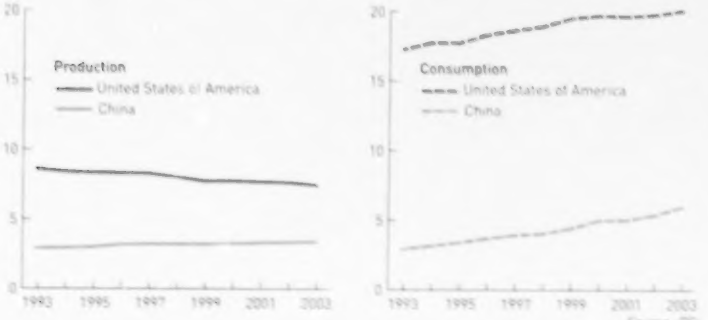
Source: Heidelberg Institute on International Conflict Research/Conflict Barometer

Military expenditure and development assistance, selected countries and all donors, 2003 (billion US$)



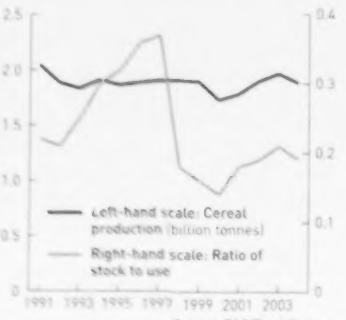
Source: Worldwatch/State of the World 2005; OECD

Oil production and consumption in the United States of America and China, 1993-2003 (million barrels per day)



Source: BP

Global cereal production and ratio of stocks to use, 1991-2004



Source: FAO/Food Outlook

Star profile: **Salman Ahmad**

As a child, Salman Ahmad – now the lead guitarist of Junoon, Pakistan's top rock band – would listen avidly to stories of India told by his maternal grandfather, a refugee from the other side of the subcontinental divide. As an adult, he has risked his career – even his life – to promote peace and sustainable development in the two countries.

'India was always in my mind as a child,' he says, 'and the need for peace in the subcontinent has been part of me. I have always strongly felt the need to find a resolution to the conflict. India and Pakistan constitute one fifth of humanity and the conflict that we have continued to harbour over the last half century has stunted the growth of people.'

After training as a doctor, he took up music 'as the most powerful expression of peace I could find', and soon he and the fellow members of the band were putting their ideals into practice. Their fusion of Western rhythms and Eastern styles took off – they soon sold 20 million albums worldwide.

While touring India, in May 1998, they spoke out against the subcontinental nuclear arms race.

'Would it not be better for India and Pakistan to try and inspire each other in the areas of education, health and economic development?' said Ahmad. 'In Pakistan, we don't have clean water, health or employment. How can we afford a nuclear bomb?'

Junoon was promptly banned from Pakistani television and radio and the band members received death threats. But they stuck to their principles, and the next year were given an award by UNESCO for 'outstanding achievements in music and peace'. In the same year the regime changed and they were able to operate freely again. President Musharraf has appeared with them at concerts.

Ahmad now says: 'There is a gradual realization that South Asia cannot progress in economic and health terms if we don't resolve our conflict. Both countries are nuclear armed and in the past six years there has been a flexing of the nuclear muscle – but it has not helped either country.

'Poverty alleviation should be the number one priority. An emergency should be declared on literacy. Most people in India and Pakistan are living day to day with the problems facing their immediate families. I have tried to address that communality through music and whenever I get a chance to speak in either country.'

'The people of both countries are way ahead of the governments as far as conflict resolution is concerned. It's now up to both leaderships to listen to the loud voices for peace in the subcontinent and resolve all disputes.'

The group has also taken up environmental issues. 'The worst thing you can do as a songwriter is to be didactic or try to be preachy, but we have tried through the music to make people more aware of their environment.'

In 2004 Ahmad was appointed as a United Nations Goodwill Ambassador on HIV/AIDS, which he describes as 'a gigantic problem – greater even than nuclear war, if you think about it'. He adds: 'It is beginning to threaten the whole subcontinent, but is also a way of bringing into focus the common threat we face.

'Goodwill Ambassador is a big, glorified term, but I am just a footsoldier. The role of people in my position is to keep shining a light on the problem and to try to get as many people on board to coordinate and cooperate as possible. The disease does not know any boundaries and the first step is to better coordinate our efforts in fighting it.'

And do their fans follow their message as well as their music? He says that their following is 'very, very loyal' and understands, after the band's outspokenness on the nuclear tests, that 'if we talk about something publicly it is not just to gain publicity.'

'I don't know if there's a measure of how many of them resonate as passionately as I do, but they do listen. And it's the power of intention. If you are doing something from the heart it touches people – and if it touches only one person it will be worth it' GL

How many EARTHS?

JACQUELINE MCGLADE describes how Europe's standard of living is rooted in the overuse of resources from other parts of the world, and calls for an eco-efficiency revolution

The philosopher Isaiah Berlin famously identified two liberties: freedom to do good things, and freedom from obstacles and constraints. The good life comes from getting the balance right between them.

Much effort has been put into achieving the *freedoms to*, such as the liberty to speak, act, vote, organize and create work and wealth, at least up to the point where exercising them limits the freedoms and rights of others. There is now increasing emphasis on achieving the *freedoms from* such as from fear, poverty, hunger, accidents, terrorism, unemployment, homelessness and disease.

Most recently the concept of 'environmental security' has arisen to define a new class of these negative freedoms, such as freedom from shortages of water, energy and other vital resources, and from pollution, natural and industrial disasters, and the loss of essential services provided by the world's ecosystems (see table). When such insecurities are high enough, they can cause migrations which themselves are sources of further insecurity.

Concern about such environmental sources of insecurity has been increasing in foreign policy and military circles for at least a decade. Warren Christopher said in 1996, when US Secretary of State: 'Our ability to advance our global interests is inextricably linked to how we manage the Earth's natural resources... [and to how we contend with] the vast new danger posed to our national interests by damage to the environment and resulting global and regional instability'.

New threats

Unfortunately, military minds and national security communities in many countries are not well suited to dealing with these new threats: they are too conservative, insular and focused on short-term and obvious military threats. In contrast, much of the public is more in tune with these new dangers and with what must be done to combat them: in a recent poll, the Slovenian public judged that its army's first priority was to help with natural disasters. As floods, heat waves, fires and avalanches associated with climate change increase in Europe and elsewhere, publics will increasingly rely on military help when disaster strikes.

National and environmental security in Europe has been tied up in a complex web of imperialism and colonialism since the start of the Industrial Revolution. Europe has never been self-sufficient in the raw materials needed to meet its consumption patterns and lifestyles.

European countries' standards of living heavily and increasingly depend on resources that lie outside their borders and which are also demanded by the expanding economies of China, India and South America. For example, 95 per cent of Hungary's water comes from neighbouring countries and 40 per cent of Europe's gas comes from Russia via the Ukraine, an insecurity that recently drew an urgent warning from the International Energy Agency.

During the struggle for Indian independence, Mahatma Gandhi was asked whether his liberated country would achieve the same standards of living as its colonial power. 'It took Britain half the ▸

ENVIRONMENTAL SECURITY

Minimizing environmental insecurities and the fear of them requires good risk reduction, mitigation and management, 'early warning' systems, and efficient yet fair liability and compensation arrangements

Freedom from	*Examples*
'Natural' disasters	*Storms; floods; avalanches; earthquakes*
'Industrial' disasters	*Explosions; fires; transport crashes; nuclear releases*
'Pervasive' pollution	*Lead; mercury; PCB 'smog'; water pollution*
Shortages of resources	*Water; land; food; oil; gas; other energy supplies; housing*
Losses of ecosystem services	*Rain absorption; soil stability; air purification; species reproduction*

THE ECOLOGICAL FOOTPRINT OF EUROPE AND THE WORLD

The orange line shows the world's demand as compared to the available capacity (the one planet line). The red line shows the number of planets necessary if all members of the human family lived the EU average lifestyle.

Source: WWF and GFN/EEA

resources of the planet to achieve its prosperity,' he replied. 'How many planets will a country like India require?'

Today, thanks to WWF's *Living Planet Report*, we have an answer. If European lifestyles were replicated worldwide, it concludes, humanity would need more than two and a half planets like Earth to renew resources as quickly as they are being consumed (see figure on previous page). Even now, it adds, global demand exceeds the regenerative capacity of the planet by about 20 per cent.

Eco-efficiency

If environmental insecurities, both in Europe and worldwide, are not to accelerate, there must be an eco-efficiency revolution that enables continuing high standards of living accompanied by at least a ten-fold reduction in the use of energy and materials, thereby decoupling energy and resource use from economic activity. Such radical innovation could leave enough ecological space for the 5.5 billion people not living in OECD countries to achieve good living standards, without the need for extra, unobtainable, planets.

Decoupling depends on how much each person consumes, and on the efficiency of the production of goods; it also needs to address equity in consumption. Eco-efficiency can be greatly improved in three main ways. Firstly by the more elegant and equitable use of resources through eco-innovations that make good use of labour and natural capital. Secondly by shifting the balance from capital-intensive products towards labour-intensive services. Thirdly by achieving high-quality lives more through a focus on 'qualitative sufficiencies' in consumption and conviviality rather than from just 'quantitative efficiencies' in resource and energy use.

Global demand exceeds the regenerative capacity of the planet by about 20 per cent

A European Environment Agency report in 2004, *EEA Signals*, demonstrates some progress in relative eco-efficiency in energy use: energy consumption rose by 7 per cent between 1995 and 2001, but not as fast as the 16 per cent increase in economic growth. There has been little progress, however, in other areas such as transport, resource use and waste creation. Monitoring these trends to detect early warnings is critical: the proposed European Global Monitoring Environmental Security system (GMES) could play a key role in this.

The European Commission, in its 'Lisbon Strategy', has linked economic stability and prosperity – particularly in terms of job creation and competitiveness – to social cohesion. This is seen as a largely socio-economic issue, to be addressed through developing the internal market, giving greater emphasis to employment, technology, innovation, citizenship and individual responsibility.

Mi Long Jue Kang UNEP Typhoon

Europe's industry is undergoing a structural shift from manufacturing to service-based knowledge. Simultaneously, Europe's population is becoming largely urbanized and more physically separated from the natural resources that sustain consumption patterns and underpin its quality of life. These factors combine to create a perception of great distance from natural resources in the minds of many citizens.

Europe's environment plays a key, but often forgotten, role in underpinning its social structure. Environmental equity has been identified as a key component of societal stability and cohesion at many different scales, ranging from national security to local stability. Environmental problems – such as climate change, hotspots of urban air pollution or over-reliance on imports of energy and resources – may act to destablize European society in the long term. Sound environmental policies, accompanied by open and transparent processes for comparison of country performance and progress, are therefore important elements in maintaining social cohesion.

On the agenda

In 2004, Europe's borders shifted eastwards and ever closer to more unsettled zones in the Caucasus, central Asia and the Middle East. In a post-9/11 world, the issue of security is now firmly on the European public agenda. Within the newly enlarged Europe there is greater inequity than ever before. The GDP of the ten new member states combined is less than the GDP of many single European countries. Regional disparities are increasing between the rural east and south, and the more affluent centre and north. With the potential expansion of Europe to include Turkey, Romania and Bulgaria, these inequalities may well become more pronounced in coming years.

Europe can help to increase social cohesion and environmental security both within the European Union and beyond by taking active responsibility for its use of nature, promoting best practice in eco-efficient technologies and developing sound environmental protection policies that benefit all ■

Professor Jacqueline McGlade is Executive Director of the European Environment Agency.

Green helmets

PEKKA HAAVISTO describes how post-conflict environmental assessments are aiding recovery and promoting peace

What remains when the shooting stops? For the past six years UNEP has been developing a new tool – post-conflict environmental assessments – bringing a fresh component of aid to countries that have suffered the serious consequences of civil unrest, conflict and wars.

It has been working in countries where the natural and human environments have been damaged as a direct or indirect consequence of conflict. The assessments seek to identify immediate risks to human health and livelihoods and provide recommendations on priorities for clean-up, sustainable use of natural resources and strengthening environmental governance.

In 1999, as ruins in Kosovo, Serbia and Montenegro were still smoldering, UNEP teams conducted the first post-conflict environmental assessment in the Balkans. They concluded that there were several environmental hotspots – such as targeted industrial facilities and oil refineries in Pancevo, Novi Sad, Kragujevac and Bor – where immediate clean-up was needed to avoid further threats to human health. The Danube was at risk from the leakage of more than 60 different chemicals, including mercury, from Pancevo. These findings led the international community to include environmental clean-up in their post-conflict humanitarian aid for the first time.

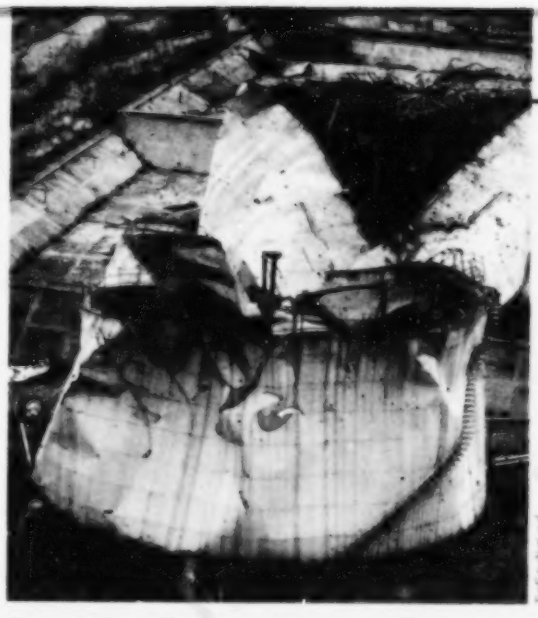
After the Balkans, this new tool has been used in Afghanistan, Iraq, Liberia and the Occupied Palestinian Territories. Each situation is unique, due to the particular nature of the conflict, the society and the ecology. However, all post-conflict studies on the environment point to three general conclusions. First, a military conflict always has negative consequences for the environment, and these need to be addressed as soon as the situation on the ground allows. Second, environmental concerns are not stand-alone issues but need to be fully integrated into both short-term humanitarian work and long-term reconstruction and development. Third, post-conflict environmental work can build confidence and peace, bilaterally and regionally: where other topics are too sensitive to discuss, the environment can often serve as an icebreaker.

Environmental degradation

UNEP's assessment in Afghanistan in 2002 identified pressures on natural resources, including water, soil, forests and wildlife, and linked poor environmental management of waste and water directly to risks to human health. It found most of the country subject to an alarming degree of environmental degradation exacerbated by poverty, population growth and years of drought. Over 80 per cent of Afghanistan's people live in rural areas, where they have seen many of their basic resources – water for irrigation, trees for food and fuel – lost in just a generation. In urban areas clean water – the most basic necessity for human well-being – may reach as few as 12 per cent of the inhabitants.

Many of Afghanistan's environmental problems can be traced back to the collapse of local and national forms of governance and resource management, highlighting the urgent need to rebuild its environmental administration. Revitalizing regional environmental cooperation to ensure proper management of water and natural resources is also essential.

In early 2003 UNEP published a study on Iraq, providing a ▶



Stephen Vallenal

New rules and regulations of conflict and warfare are needed to minimize the environmental and health risks

timely overview of key environmental issues in the context of the recent conflict. It took into consideration the chronic environmental damage already resulting from the Iran-Iraq war of the 1980s, the 1991 Gulf War, the unintended effects of UN sanctions and environmental mismanagement by the former Iraqi regime. Draining the Mesopotamian Marshes and building artificial waterways has ruined some of the country's most valuable areas of biodiversity. Water pollution is affecting not only the Euphrates and Tigris rivers, but the wider Persian Gulf region.

The destruction of military and industrial infrastructure during Iraq's various conflicts has released heavy metals and other hazardous substances into the air, soil and freshwater supplies. Smoke from oil-well fires and burning oil trenches, and looting and sabotage, have caused local air pollution and soil contamination. The lack of investment in the oil industry in recent years has reduced maintenance and raised the risk of leaks and spills.

Public concern

In Iraq – as in Kosovo, Serbia-Montenegro and Bosnia-Herzegovina – the use of depleted uranium ammunition during the conflicts has raised much public concern. International workers, including peacekeepers, are also concerned about its effects. UNEP has made several field studies on its use: recommendations include fencing and cleaning up contaminated sites.

A UNEP team visited the Occupied Palestinian Territories in late 2003, identifying acute environmental problems arising from the ongoing conflict and the long-term weakening of environmental governance. In times of conflict, few resources are available for developing environmental management or increasing public awareness about the environment. This leads to a general decline in environmental quality: landfills are not properly managed, groundwater is not protected from contamination and sewage flows directly into the Mediterranean. Its report concluded that, despite the current political difficulties, environmental problems should be addressed immediately in order to preserve natural resources and establish a safe environment for future generations.

The work in the Occupied Palestinian Territories has a component of environmental diplomacy and peacemaking. When there is a Palestinian state, it will have to cooperate on transboundary environmental issues with its neighbours – including Israel. Creating tools for Israeli-Palestinian environmental cooperation is a peacebuilding element for the whole region.

In Africa, UNEP has been working since 2003 on post-conflict issues in Liberia, where the misuse of natural resources has been both a source and sustainer of conflict. As timber was cut down to finance the war, logging roads were cut deeper into virgin forest. These facilitated illegal logging and opened up greater areas for illegal hunting. Several species are already under threat.

Severe consequences

Damage to the electricity production and distribution infrastructure has resulted in a massive increase in the use of charcoal. Forests – even mangrove forests in wetlands and costal zones – are under severe pressure, increasing coastal erosion. The massive movement of refugees and internally displaced people is another of the most severe consequences of the conflict. As in so many post-conflict countries, Liberia's environmental administration has to start from scratch. Buildings have been looted and burned, files and books destroyed, civil servants added to the refugees.

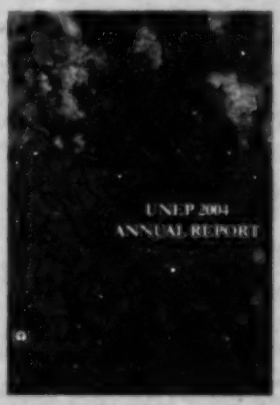
Providing the Liberian Government and people with the capacity and proficiency to manage their natural resources in a just and sustainable way will make a key contribution toward increasing regional stability. The international community must now ensure that environmental issues are fully integrated into overall reconstruction efforts.

Post-conflict environmental assessment is a new tool in countries affected by war and its concomitants. Despite the uniqueness of the concept and the clear demand for its post-conflict work, neither UNEP – nor anyone else – should rest on its laurels and wait for the next conflict, and its environmental consequences, to arise. New rules and regulations of conflict and warfare are needed to minimize the environmental and health risks, for example by limiting possible targets and weapons. International interventions in conflict areas should also always include minimizing post-conflict environmental damage by protecting the population and initiating necessary clean-up and protection measures as soon as possible.

'Green helmets' – providing environmental protection during time of conflict and in post-conflict situations – are not utopian. They can be organized when the political will and technical capacities are in place ■

Pekka Haavisto is Chairman of the Afghanistan, Occupied Palestinian Territories, Depleted Uranium and Iraq projects, UNEP.

BOOKS & PRODUCTS



The UNEP 2004 Annual Report looks at the organization's work and achievements during the year. Under the headings 'The Age of Partnerships' and 'Protecting Natural Resources' it examines UNEP's advances in forging collaborations with civil society, the private sector, international organizations and governments, in promoting sustainable development and protecting the environmental foundations on which human society stands. It is available from www.earthprint.com ■

Ever since its inception in 1972, UNEP has enjoyed a special relationship with civil society in tackling environmental challenges and, during this period, NGOs have gained considerable leverage in international environmental relations. A new 30-page book **UNEP and Civil Society: Thirty Years of Partnership** describes the evolution of the dialogue between stakeholders, major groups and UNEP over the past three decades and illustrates how partnerships have led to increased participation in the deliberative process ■

Philipp Meise/University of Bradford

China has invested more than $100 million in a state research project into ***fuel-cell and hybrid cars and buses****, with an eye to establishing a stake in the future market for low-polluting vehicles. Prototype fuel-cell cars and buses have been tested over thousands of kilometres, and a first hybrid bus – using both petrol and electricity – carried passengers in Wuhan in Hubei province, cutting emissions by a third. The news follows the hybrid Toyota Prius being voted Car of the Year in both Europe and the United States in 2004. Xu Jing, Vice-Director of China's Ministry of Science and Technology High Technologies Departments, says that the country is aiming 'to build our own capacity in competing with developed countries in tomorrow's auto industry'* ■

The *GEO Year Book 2004/5* is the second in an important series which serves as a guide for policy makers and a stimulus to future action towards the achievement of sustainable development. A spin-off product of UNEP's flagship report, *Global Environment Outlook (GEO)*, it aims to bridge the gap between science and policy by highlighting the major global and regional environmental issues and developments of the year, and their implications; by focusing on major policy developments and instruments that have a bearing on sustainable development; and by strengthening the trend analyses of environmental issues in future comprehensive GEO reports and other scientific publications. It is published in English, French, Spanish, Arabic, Chinese and Russian, and is available to buy ($20 plus postage and packing) from www.earthprint.com ■

UNEP's *groundbreaking Environmental Law programme has recently published a series of important books. These include: an updated and expanded* ***UNEP Training Manual on Environmental Law****, which will serve as a major teaching/training source in developing countries; the* ***Judges Handbook of Environmental Law****, which will assist the judiciary in understanding and enforcing environmental law;* ***Texts of Selected Documents on International Environmental Law****, a comprehensive, user-friendly reference book; the* ***Compendium of Summaries and Judgements in Environment-related Cases****, a rich source of judicial precedent on environmental issues; the* ***UNEP Judges Programme****, giving an overview of this pioneering initiative; and* ***UNEP Environmental Law Programme: Thirty Years of Progress****, which showcases UNEP's major achievements in the field* ■

'Chilled by the sun' is the slogan for a new initiative by Unilever, the multinational company, which uses **solar energy to cool ice-cream cabinets**. Five of the cabinets were tested during the baking hot weather of the Athens Olympics and the company says it is an example of how it is 'trying to reduce its impact on the environment, including climate change'. It is also introducing cabinets using hydrocarbons as refrigerants, in a technology originally pioneered by Greenpeace. Unlike the older alternatives they do not attack the ozone layer or increase global warming – and they use up to 9 per cent less energy ■

Unilever

Initiative FOR CHANGE

JAN KUBIS describes a pioneering endeavour addressing environment and security threats in the Southern Caucasus

The Southern Caucasus has long been a focal point for change, a bridge between Asia and Europe. Today, social, political and economic transformations are altering century-old relationships between countries and communities, affecting the natural environment and, in turn, being affected by it. In the worst-case scenario, environmental stress and change could undermine stability in the region. In the best, sound environmental management could be a means for catalysing stability while promoting human security and sustainable development.

Located between the Caspian and the Black Seas, and surrounded by economically, politically and culturally influential neighbours (Turkey, Iran and Russia), the former Soviet republics of Southern Caucasus – Armenia, Azerbaijan and Georgia – became independent states in 1991. They were challenged throughout the 1990s by the dismantling of the Soviet economy and by the pressures of political transformation. Now – though continuing to suffer from the dramatic economic decline of the 1990s and the environmental legacies of the Soviet era – they are emerging into a period that offers hope for a more prosperous future.

The Southern Caucasus countries share a recent history marked by tension and violent struggle, economic collapse and nascent recovery, and slow democratic development. And they are now in the midst of similar social, political and economic transformations.

The interaction between environment and other human security pressures in contributing to the threat of instability – or reducing it – is complex and depends on the context. But research suggests that – though conflicts have multiple causes – the degradation, depletion or mismanagement of natural resources linked to demographic change can harm local and international stability in two ways.

The first is by reinforcing and increasing grievances within and between societies: where few alternatives remain, or where perceived inequities or opportunities for enrichment are great, groups may compete for resources, creating opportunities for violence. The second is by weakening states – by providing revenue for insurgents and criminal groups, depressing economic productivity, or undermining the legitimacy of the state in the eyes of its citizens.

Basis for peace

But sound environmental management can also be a basis for building peace and for post-conflict reconciliation. A convincing body of work has demonstrated, for example, that nations are more likely to cooperate than to fight over the management of international river basins.

Recognizing the multifaceted character of environmental sources of human insecurity, three organizations with different mandates, expertise and networks – the Organization for Security and Co-operation in Europe (OSCE), the United Nations Development Programme (UNDP) and UNEP – formed the Environment and Security Initiative (ENVSEC) in late 2002.

Working in consultation with national and international experts, ENVSEC seeks to identify and map situations where environmental problems threaten to generate tensions or offer opportunities for synergies – among communities, countries or regions. It also seeks to help host governments generate an agenda of environmental management instruments and to attract investments that can help promote peace and human security.

The initiative builds on the combined strengths, expertise and field presence of the partner organizations to perform three key functions. First, assessing vulnerability and monitoring environment and security linkages. Second, building capacity and developing institutions. And third, developing, implementing, and advocating the integration of environmental and security concerns and priorities in international and national policy making.

It offers governments a valuable

approach in seeking to tackle the interconnections between environment and security in several ways. It is an open forum functioning at the invitation of governments, aimed at generating cooperation and ensuring coordination between international institutions and drawing on their respective strengths and experience. It draws its analysis from consultations with stakeholders in the region, from both government and civil society, fostering local ownership of the outcomes. It seeks to overcome disciplinary overlaps and integrate environmental, economic, social, political and institutional aspects of security. It combines analytical, geographic and communication skills to address policy makers at various levels. And it aims to create and implement practical approaches to environment and security linkages in vulnerable areas.

OSCE, UNDP and UNEP developed a joint study on environment and security links in the Southern Caucasus, at the invitation of the authorities of Armenia, Azerbaijan and Georgia, to assess risks to human security and stability within the framework of ENVSEC. The conclusions of the ENVSEC Southern Caucasus assessment report – presented to the environment ministers of the three countries concerned in Tbilisi in October 2004 – follow.

Sources of instability

From a security perspective, the sources of instability in the Southern Caucasus can be divided into two categories. The first comprises the continuous dangers stemming from the conflicts inherited from the Soviet collapse. These include the Georgian-Ossetian and the Georgian-Abkhaz conflicts, and the conflict between Armenia and Azerbaijan based on territorial claims over the Nagorno-Karabakh region that has caused an outflow of refugees and internally displaced persons and the disruption of political and economic ties between the countries in conflict. The dangers of spillover from the unstable regions of the Northern Caucasus also fall into this category.

The second category of sources of conflict, or 'new' dangers, can arise from the decline in living standards and the shifts in the political landscape. New polarizations along socio-economic lines could have a regional dimension, and become a new source of instability.

Amir Mesic–Still Pictures

Sound environmental management could be a means for catalysing stability

From an environmental perspective, the Southern Caucasus countries are striving to overcome the ecological consequences of the Soviet period, while regenerating their economies and addressing contemporary and future environmental concerns – including managing the impacts of rising industrial production, adapting to climate change and regulating new technologies. They need to target investment in cleaner production technologies and high value-added industries, and strengthen their waste management capacities if they are to revitalize their economies in an environmentally sensible way.

On the one hand, the lack of information about the state of the environment and the impact of environmental degradation on the safety of populations in zones of conflict can hamper peace processes. On the other, the upturn of economic productivity could increase tension over renewed pollution, or over access to natural resources such as clean water, soil and living space. Such environmental pressures could make social polarization and internal struggle more acute. And a government's failure to effectively manage natural resources and environmental conditions in the interests of its citizenry could result in a loss of legitimacy by the state.

The report identifies three areas of risk for environment and security: environmental degradation and access to natural resources in areas of conflict; managing cross-border environmental concerns such as transboundary water resources, natural hazards, and industrial, infrastructure and military legacies; and population growth and rapid development in capital cities.

As they developed the report, experts and authorities from Armenia, Azerbaijan and Georgia agreed on shared concerns and common priorities in dealing with environmental threats to security, including the need to assess, in depth, the state of the environment in areas of conflict. The task now facing local authorities is to define, with the assistance of the international community – including OSCE, UNDP and UNEP – a work programme designed to deal with the threats that have been identified.

Realistically, it is very difficult to reconcile the parties and make them cooperate as long as political issues remain unresolved. But this clear political precondition should not be a barrier to promoting scientific dialogue and supporting technical solutions that do not entail direct political cooperation between parties to the conflicts.

Projects addressing environmental problems that threaten human security will bring direct benefit as far as the safety of local populations is concerned. In the longer term, by avoiding further tensions, they will also make a positive contribution to the solution of broader political disputes ■

Ambassador Jan Kubis is Secretary General of the Organization for Security and Co-operation in Europe.

Security in *turbulence*

TAMAR LEBANIDZE describes how environment and security concerns can lead to fruitful cooperation, even in one of the world's most turbulent regions

Environmental causes lead to the reallocation of already scarce resources – such as land, water and forests

People associate a whole variety of feelings with the term 'security'. The very basics – life, food, shelter – sit as if at the bottom of a pyramid, with values like mutual respect and self-esteem at the top. It can be argued that the meaning of security depends a lot on the threats (real or perceived) that confront particular people or societies; in poorer countries, being secure may mean being sure about today's dinner while elsewhere people could feel extremely vulnerable without proper medical insurance. But what does it mean to be secure in a country like Georgia, in a turbulent region at a turbulent time?

Our country's Rose Revolution changed the region's political landscape a year ago, and a new candidate Cabinet of Ministers submitted its programme to the Parliament early in 2004. The programme pays much attention to security issues in general, and to the environment and security in particular. As Georgia's Minister of Environment Protection and Natural Resources, I share its ordinary citizens' concerns on many aspects of security. Opinion polls show unsurprising distress about such obvious worries as territorial integrity, unrelieved economic slump, jobs, incomes and corruption. What may seem surprising is a high level of awareness about environment-related risks.

However, closer scrutiny reveals this to be less unusual than might have been thought. Hardly a day goes by when the population does not hear about environmental disasters from around the world. Besides global threats like climate

change and ozone layer depletion, there are environmental hazards at home. In Georgia, the word 'ecological migrants' has been in use for the last two decades, to describe the thousands of its people forced to resettle in safer places from areas affected by natural disasters – landslides, floods, desertification – aggravated by the damaging impact of uncaring development. Environmental causes lead to the reallocation of already scarce resources – such as land, water and forests – occasionally triggering local conflicts.

Political tensions

Other countries of the Southern Caucasus region are confronted by the same kind of environmental problems. They share the same resources and, logically, there is a sound reason for regional cooperation. However, existing political tensions have already complicated the situation. Environmental and resource-sharing issues may well intensify these tensions and erode security further if no preventive steps are taken. International expertise is needed to assess this non-traditional threat to security, while willingness and mutual trust are the keys to counteracting it.

Several international projects are addressing regional environmental problems through cooperation with donors (the European Union, Germany, Sweden, the United States) and international organizations. There is solid proof that cooperation is possible on grounds of common interest, and the environment presents a neutral enough field for such cooperation to be successful. Still, challenges of a different scale may come to the fore in the not-so-distant future. Are we prepared?

Fruitful cooperation

The Environment and Security Initiative (ENVSEC) – a joint effort of UNEP, the Organization for Security and Co-operation in Europe (OSCE) and the United Nations Development Programme (UNDP) – has recently prepared a report, *Environment and Security: Transforming Risks into Co-operation – The Case of the Southern Caucasus*. This was launched at the Meeting of the Environment Ministers from the Eastern Europe, Caucasus and Central Asia Region and Their Partners in Tbilisi, in October 2004. The sensitivity of the region makes any such effort the subject of scrupulous scrutiny – and the conclusions of the report are very interesting indeed. It is worth reading the whole document, but its main lesson is simple: regional environment and security concerns can be turned into a field for very fruitful co-operation, possibly laying the ground for improvements in other areas too.

The environment and security both became global issues in the 20th century. Global efforts are needed to respond to modern challenges. As in case of the Southern Caucasus, local and regional efforts should be based on international experience and involvement – because these days, in these issues, everyone is a stakeholder ■

Tamar Lebanidze is Minister of Environment Protection and Natural Resources, Georgia.

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WATER and WAR

STEVE LONERGAN says that tensions over water will increase as scarcity increases, but that outright conflict can be avoided

The purposes of the United Nations, as set forth in the UN Charter, are to maintain international peace and security; to develop friendly relations among nations; to cooperate in solving international economic, social, cultural and humanitarian problems and in promoting respect for human rights and fundamental freedoms; and to be a centre for harmonizing the actions of nations in attaining these ends. These purposes were reinforced in the United Nations Millennium Declaration of 2000 and further clarified. Three key areas now define United Nations activities: Peace and Security; Development; and Human Rights and Democracy.

As we enter the 21st century, new challenges to these areas are emerging. We are confronted with both old and new threats to international peace and security; poverty has been recognized by world leaders as the most daunting of all the problems facing the world in the new century; and fundamental values of freedom, equality, solidarity, tolerance, respect for nature and shared responsibility now form common values through which achievements in the former two categories can be realized. In each of these key areas environment and resources play a central role. Threats to common security now include so-called 'soft threats': environmental degradation, resource depletion, contagious diseases and corruption, to name just a few.

It is now recognized that environmental degradation and both scarcity and abundance of natural resources are potential sources of conflict – and cooperation – and need to be more systematically addressed in this context. Access to fresh water and sanitation ▶

services are a precondition to achieving the other internationally accepted goals in the Millennium Declaration.

Nowhere is this issue more important than in the Middle East, where water is considered a 'strategic' resource and tensions between countries in the region over it are high. There it has become a major political issue, and the various peace agreements that have been proposed or signed in recent years all include water. This has led to claims from various sources – attributed (but unsubstantiated) to such individuals as Boutros Boutros Ghali and former King Hussein of Jordan – that 'the next war in the Middle East will be over water'. This rhetoric has captured the public imagination and caused much consternation in the intelligence communities of various countries, who worry whether water – or other scarce resources – may be a future flashpoint for international conflict.

Scarce resource

In many cases, these comments are little more than media hype; in others, statements have been made for political reasons. Yet, regardless of the source, or the reason, water is clearly a scarce resource in some regions. Tensions exist over water use, water ownership and water rights – and are likely to increase in the future. The Middle East and Africa provoke perhaps the greatest concern about water shortage: by 2025, 40 countries in the regions are expected to experience water stress or scarcity.

Water scarcity is a function of supply and demand. Demand is increasing at an alarming rate in some regions, through population growth and increasing per capita use. In many water-scarce countries, such as Jordan and Israel, there is no obvious and inexpensive way to increase water supply, and tensions among different water users are likely to result. In other countries, such as Egypt, improvements in water efficiency, moving away from water-intensive crops, or importing water from nearby countries may offer reasonable solutions.

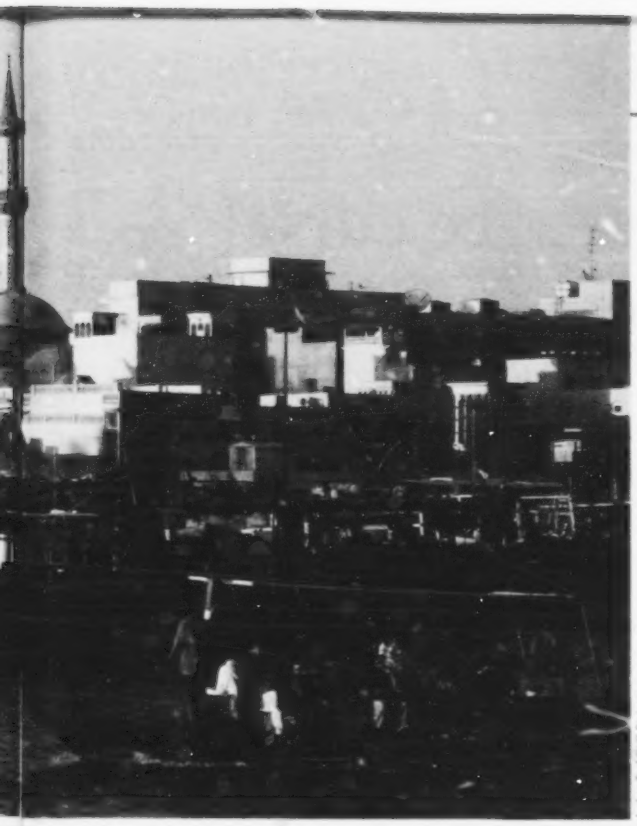
The second crisis is deteriorating water quality. Agriculture is the biggest polluter: increased use of fertilizer and pesticides has contaminated both groundwater and surface water supplies. Domestic and industrial pollution is also increasing, and the problem affects both developed and developing countries.

Finally, the use of water has a geopolitical dimension. Water moves from upstream to downstream users, and withdrawals and type of use in one place may affect the quantity or quality of supplies downstream. There are also historical, cultural, economic and social aspects of water use. To some, water is a gift from God, and should not be priced, while others, such as the World Bank, have pushed for full marginal cost pricing of water.

The lack of a suitable legal framework for resolving international water resource disputes presents another problem. Sovereignty over international rivers generally invokes one of four doctrines: absolute territorial sovereignty, which implies that riparian states may use water resources in any way they please, even to the detriment of other nations; absolute territorial integrity, which suggests that riparian use of a river should not negatively affect downstream riparians; limited territorial sovereignty, which invokes a combination of the two within a framework of equitable use by all parties; and community of co-riparian states, which promotes integrated management of river basins.

Global implications

Problems of water scarcity and water pollution affect human and ecosystem health, and hinder economic and agricultural development. Local and regional problems, in turn, may affect the rest of the world by threatening food supplies and global economic development. The United Nations Commission on Sustainable



Jacket Ltd/Still Pictures

'If there is a political will for peace, water will not be a hindrance. If you want reasons to fight, water will give you ample opportunities'

Development concludes that these problems could result in a series of local and regional water crises, with serious global implications.

Is there likely to be violent conflict over water in the future? Past experience suggests that this is unlikely. However, many claim that the probability of conflict is increasing. The basis for most projections for future conflicts is that with the growth of demand, the decline in freshwater availability (through groundwater mining and pollution), and the adverse health effects from poor water quality, scarcity will result in violence and water wars. Yet fighting over water makes very little sense economically or politically.

There is little question that water scarcity will be a problem in some regions in the future. Global warming is likely to alter rainfall patterns and evapo-transpiration regimes in many regions, and long-term planning for water supply must take this into consideration. There is also little question that water will cost more, as it becomes increasingly scarce. This will necessitate improvements in water efficiency – and possibly the restructuring of economies away from water-intensive sectors.

The greatest improvements can be made in agriculture, since irrigation here accounts for almost 70 per cent of water use worldwide. As the price of water increases, different distribution systems are coming into operation: water moved by tanker, by long-distance pipeline and even by plastic bags. There may also be greater use of desalination technology, although to date it has been prohibitively expensive and operations are confined primarily to countries with surplus energy supplies. Importing water – as in Singapore – may become more normal.

Two other factors may play a role in water-related tension. First, food imports may be driven by water scarcity. Half the world population will soon depend on the world food market for their food security. How poor, water-scarce countries will finance these food imports may become a major issue. Second, increased competition is expected for water: between urban and rural populations; between the agriculture and domestic sectors; and between countries. This may be exacerbated by rapid urbanization. Nevertheless many of the problems with water supply in the future can be resolved through cooperative agreements and some degree of economic investment. Such agreements and preventative diplomacy over shared water supplies will continue to dominate.

Disputes over water

Historically, there is little evidence that water scarcity has caused violent conflict though, in many cases, water has been used as a strategic goal or target, as part of military activities. There have, however, been many disputes over water within nations: it may be that the probability of violent conflict over water varies inversely with the size (and type) of the political bodies involved.

Yet water scarcity will be at the forefront of the international agenda for decades to come. In some cases, water may even be a contributing factor in international conflict. A member of the Israeli negotiating team to the Middle East Peace Process, Hydrology Professor Uri Shamir once noted: 'If there is a political will for peace, water will not be a hindrance. If you want reasons to fight, water will give you ample opportunities' ■

Steve Lonergan is the Director of the Division of Early Warning and Assessment at UNEP and co-author, with David Brooks, of Watershed: The Role of Freshwater in the Israeli-Palestinian Conflict *(IDRC Books, 1994).*

Ron Giling/Still Pictures

Beating the 'resource curse'

EMIL SALIM describes how environmentally, socially and economically sustainable development is needed to avoid conflicts over resources

The frightening growth of the world's military spending represents an opportunity forgone to achieve the Millennium Development Goals. In 2001 it already stood at $839 billion, according to the Stockholm International Peace Research Institute, with about three quarters of it in developed countries. By contrast it would take just $19 billion to wipe out starvation and malnutrition globally, the same amount to provide safe clean drinking water and only $5 billion to eliminate illiteracy.

In most cases the objectives of armed conflicts are practical, to control accessibility to natural resources like oil, gas, diamonds, emeralds and timber. All those who use land and other resources – like farmers, loggers and fishers – have their own interests. The control of a natural resource by one will pre-empt others using it in a different way. Conflicts of interests can grow into open conflicts. When population and consumption increase, so does pressure on the use of natural resources. Settling conflicts on their use by force is a short cut preferred by those in strong positions.

The World Bank's *World Development Report 2003* reported that unsustained growth is closely associated with point-source resources and civil conflicts. When production and revenue patterns are concentrated, such as with fuels or minerals – and government controls revenues from resource extraction – opportunities are opened up for financing activities without scrutiny by taxpayers. Easily appropriable rents weaken governance and institutions, increase corruption and self-interested rent seeking, and prevent economic growth. Rival groups emerge, eager to have their share. Thus a 'resource curse' can plunge a country into armed conflict.

Single track

Practically all armed conflicts are now taking place in developing countries, indicating that the development pattern followed thus far has serious shortcomings. Developing countries usually adhere to the single track of economic development, to raise incomes and growth of national GDP. When the economy grows, increased income is expected to trickle down and make social and environmental development available.

Economic development successfully raised gross world output from $6.6 trillion to $44.9 trillion over the last half of the 20th century. This growth was, however, accompanied by increased inequality: 17 per cent of the world's population receive 78 per cent of world income, while 60 per cent of the people share just 6 per cent of it. Close to 2.2 billion people live on less than two dollars a day.

World population is expected to grow from its present 6.4 billion to 7.9 billion in 2025 and 9.3 billion in 2050. Some 5.2 billion of today's 6.4 billion live in developing countries, and their numbers will increase to 8 billion in 2050. Their developmental needs are increasing while the natural endowments in their territories remain the same, creating the potential for open conflicts.

Growth must continue, and this will

No country is an island

The devastating tsunami that hit my country, Indonesia, and nations around the Indian Ocean in December 2004 forcefully underlines the importance of environmental security. It also demonstrates that the resilience of development depends on its being based on economic, social and environmental sustainability. Specifically it has shown the importance of preserving mangrove forests – which have been shown to protect people and communities in this and previous catastrophes – and of constructing buildings that are in accordance with nature's carrying capacity. Construction technologies need to adopt traits from the coconut and bamboo trees, which in most places have survived the ravages of tsunamis. The disaster also illustrates another truth – that human society is like an ecosystem; if part of it is hit, it all vibrates. Truly no one, no country, is an 'island'. ES

push consumption even further upwards. Enhanced economic development, while necessary, is not sufficient. The whole world population must now move along the path of sustainable development. This implies economic, social and environmental sustainability.

The economy can be sustainable if it aims at poverty alleviation through full employment, and simultaneously copes with negative economic impacts on social and environmental sustainability.

Social sustainability is achieved by focusing development on raising the quality of human creativity through improved education, health and capacity building – and by strengthening social cohesion among members of society through improving social solidarity, cooperation and tolerance among religions and races and ethnic, professional and political groupings. This social development must, in turn, be accomplished while simultaneously considering its impact on economic and environmental sustainability.

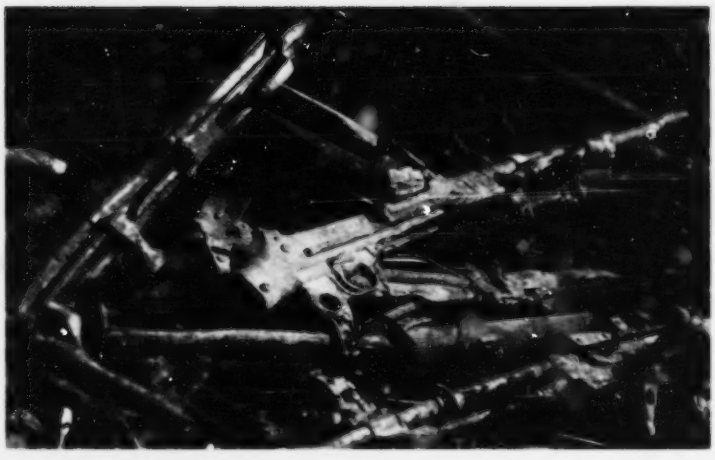
Preserving and protecting

Environmental sustainability requires preserving and protecting natural resources in ecosystems essential to support life. Similarly it must be achieved while simultaneously considering its impacts on economic and social sustainability.

A sustainable livelihood, therefore, is achieved by applying pro-active developmental policies through this triple-headed economic-social-environmental sustainability.

In the past, conventional economic development has produced goods and services but had negative impacts on social and environmental development. Industry has polluted the atmosphere, and depleted the ozone layer. Transport and energy have heavily polluted the air with greenhouse gases that change the climate and warm the globe, causing such impacts as sea-level rise, increasingly frequent floods, spreading desertification, growing evaporation of surface water, shrinking forests, the erosion of biodiversity and the eruption of new hazards to health.

The main causes behind such negative impacts from economic development are 'market failures', the inability of market prices to absorb the appropriate social and environmental signals, and the failure of business enterprises to internalize externalities into their structures of costs and benefits.



Sebastião Salgado/Still Pictures

Theoretical instruments have been developed to value social and environmental services and some countries have already introduced 'green budgets' and 'green accounting' into their systems to try to correct market failures.

Recognizing the potential for conflicts in natural resource management, the World Bank Institute has developed a peace and conflict impact assessment that, together with spatial planning and integrated social and environmental impact assessments, can provide comprehensive policy tools for sustainable development.

Putting economic, social and environmental sustainability into the perspective of a global common vision for the world in 2050 is even more important than developing analytical tools for it. We need a universal, global commitment to build a sustainable world.

This will requires global cooperation in:

1. Population dynamics, including striving to reach a stable population with high human and social cohesive capacity.

2. Consumption patterns that will induce the production of goods and services based on less material-intensive, renewable and recyclable resources; renewable and clean sources of energy; low-waste and low-polluting commodities and services; goods and services that use little space and land area; products and services based on socially and environmentally friendly clean technology.

3. Delivery of the Millennium Development Goals with equity.

4. Policy measures to correct global market and policy failures.

5. Consolidating multilateral institutions, such as the United Nations, and the triangle of partnership between governments, businesses and civil society.

Conflicts of interests can grow into open conflicts

Cooperation along these five lines of action makes it possible to strive for economic, social and environmental sustainability with genuine global democracy on a multilateral basis – as members of the United Nations family move forward on the pathway to a humane and cohesive world in 2050, free from poverty, inequality and fear ■

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GREEN PEACE

When God made the world, He made no mistakes. The natural environment was His finest creation. He made a perfect ecosystem with forests green and beautiful, magnificent views and a natural habitat where different kinds of animals were happy to live. The Bible describes it as 'the Garden of Eden': its beauty and natural glory demonstrate how God cherishes the natural environment and makes its preservation His top priority.

I remember from my childhood the wonder of the natural scenes around Sierra Leone. The forests were fulfilling what God intended in their creation. The valleys, the hills and the mountains were superb. The variety of animals made the scene especially interesting: baboons, monkeys and different types of reptiles all added their contribution and beauty to the wonder of the complete environment. That was when Sierra Leone was a Sierra Leone to be proud of.

As I grew up into youth, these memories disappeared like passing fancies.

Such issues were no longer important to me. Most of my time growing up was dominated by a devastating war. It extended to the destruction of countless things. The green forests were no more. They became brown, burnt by the bombs that landed on them, or were wiped out by townspeople for wood for their stoves.

IN SEARCH OF SAFETY

The destruction was complete enough to drive away all animals. Scared by the heavy sounds of bullets and bombs, they moved to other places or countries in search of safety. At the time, we children could not even notice that such beauty had been taken from our environment, even though the losses caused by the war were threatening our very homes. These were times when life and property were indiscriminately destroyed. Children were left with no hope for the future since most lost their parents and many others were forcefully conscripted. What an ugly, indelible past!

Today this has become history. The issue now is how to recover from this incredible human blunder. I see natural environments being restored, such as around my home in Regent village. With the help of non-governmental agencies and government departments, I now see forests being restored back to their original beauty. World Environment Day 2004 was especially remarkable, as everyone – even children – embarked on tree planting. Through the planting of trees, the Regent village environment is gradually returning to its original norm. The animals are coming back – there are stories of people seeing elephants and other species in some areas.

SYMBOL OF REBIRTH

So regeneration is replacing a degenerated past. Restoration has brought hope and confidence to the community. The people themselves are organizing community mobilization efforts. Chopping down trees for fuel and building timber has been discouraged by government policies. For me and my friends, the psychological effect of seeing the environment restored is a symbol of the rebirth of a Sierra Leone we can be proud of.

As the environment recovers its lost identity, it rescues people from the trauma of war. It calls for a turn to a new page. It gives hope and challenges to people who think that all is lost. If trees can resume their original form after a devastating war, human beings can also recover. Sustainable development is transforming the negative legacies of war into a brighter future.

Max B. Kanu, 24, Sierra Leone